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THE CANVAS-BACK IN MASSACHUSETTS.

BY S. PRESCOTT FAY.

UNTIL recent years during the fall migrations of ducks along the coast of Massachusetts the Canvas-back (*Marila valisineria*) has always been conspicuous by its absence, and in spite of the numerous "gunning stands" on many of our larger ponds comparatively few of these ducks seem to have been killed. At most places they are looked upon as rare stragglers, and because of their market value it is with a sense of great satisfaction that one of these ducks is taken. Owing to its infrequent occurrence up till five years ago doubtless most of the specimens seen or killed were reported, with the exception of course of a small percentage it is reasonable to suppose escaped notice; but lately this has not been the case. In one locality especially where I find the Canvas-back has become reasonably plentiful a great many have been killed and more seen that have not been publicly recorded. Of this very little seems to be known. Recently I have been interested in these records for the State and have found such as above described to be the case on Martha's Vineyard island. The reason for this state of affairs seems to be due to the fact that these ducks have been killed by what we may call "gunners,"—that is, men who shoot for the mere sport of shooting, with no ornithological interest. The last year or so I believe one or two ornithologists have not been so careful in recording all occurrences, because they felt it is not the rarity it used to be. This applies, however,

only to a few cases, chiefly for Plymouth County, but as for the state of affairs on Martha's Vineyard that is a very different matter, involving as it does a large number of records. Because this seems to be scarcely known it will be well worth while to look into it very carefully.

In gathering these records together it is very evident that the status of this species is changing and is very different from what it was a number of years ago, or even ten years ago, for this decided change has all come within the last decade. Until then it was considered a very rare straggler to our coast; in fact, five years ago it was generally considered so, and if I am not mistaken there are some who still believe it to be the case. On investigation a great many recent records came to light, and by putting these down in yearly sequence we can see how this species has increased recently to such an extent, I think, that it can hardly be called a rare duck in our State any longer. However, before going any further it will be well to consider the specimens in our Museums, and see what conclusions we can draw from that source.

In the collection of the Boston Society of Natural History there are but four specimens, as follows:

1. No date; immature male. Dr. Samuel Cabot, Jr., Newburyport.
2. No date; female. Dr. Samuel Cabot, Jr., Newburyport.
(Though no date accompanies these, they were presented by Dr. Cabot, according to the records, in 1845 or 1846.)
3. Nov. 10, 1908; female. Dwight Blaney, Eastham.
4. Dec. 18, 1908; immature male. " "

In the collection of the Peabody Academy of Science, Salem, there are two specimens, both males, taken at Ipswich in 1905.

There are no specimens from the State in the Museum of Comparative Zoölogy, Cambridge, nor in Mr. John E. Thayer's Museum at Lancaster.

Of these six specimens four have been taken within the last five years. This then certainly points to the fact that until recently they were so rare that very few were killed. These conclusions are further upheld by the opinions of all the leading ornithologists, for they have agreed upon the rarity of this species in Massachusetts, certainly up to within the last few years.

E. A. Samuels, in his 'Ornithology and Oology of New England,' published in 1867, says: "The Canvas-back is rarely taken in New England. I have seen a few that were killed in Ponkapoag Pond, Canton, Massachusetts." J. A. Allen speaks of its being "occasionally found at the western part of the state."

The earliest mention was made in 1832 by Thomas Nuttall in his 'Ornithology of the United States and Canada,' where he says: "In the depth of winter a few pairs, probably driven from the interior by cold, arrive in Massachusetts Bay in the vicinity of Cohasset and near Martha's Vineyard; these, as in the waters of New York, are commonly associated with the Redhead or Pochard to which they have so near an affinity."

Neither Wilson nor Audubon commented on the Canvas-back in Massachusetts or even New England. J. A. Allen, in 'Birds of Massachusetts,' in 1878, states that it is a "very rare autumn and spring migrant." In 1895, F. M. Chapman, in his 'Hand-book of Birds of Eastern North America,' considers it "rare on the Atlantic Coast north of Delaware," and Messrs. Howe and Allen, in 1901, in their 'Birds of Massachusetts,' say it is "a very rare autumn migrant on the coast," mentioning about ten places where it has been reported. Dr. C. W. Townsend, in 'Birds of Essex County,' 1905, calls it a "very rare transient visitor" and gives but four records. Since the publication of his book there have been ten more killed on five different occasions, making more records for the last five years than there were for the entire period previous to 1905.

Wells W. Cooke, in 1906, in Bulletin Number 26 of the Biological Survey, entitled 'Distribution and Migration of North American Ducks, Geese and Swans,' says "it is hardly more than a straggler in Massachusetts." Also, in the same year, William Brewster, in his 'Birds of the Cambridge Region of Massachusetts,' puts the Canvas-back in the list of occasional or accidental visitors, considering it "of very rare occurrence during migration." He further says, "It is not surprising that the species is and apparently always has been but little more than a chance straggler to New England." This exactly describes the situation up to the time of the publication of his book. For this region he is able to give but three records, and although since then there have been no

recent occurrences strictly within the Cambridge region, just outside at Spot Pond, Middlesex Fells, Jamaica Pond and the Chestnut Hill Reservoir we have four records comprising six birds, all observed by reliable ornithologists.

The most recent list of Massachusetts birds is that published in 1909, in the 'Occasional Papers of the Boston Society of Natural History,' by Glover M. Allen, entitled 'List of Aves of New England.' Here the Canvas-back is considered a "rare migrant," so that nearly up to the present time it was still looked upon as a rare species.

Below is a table of all the records I have been able to find, arranged chronologically, so that by comparing them in yearly sequence the marked increase of these ducks during the fall migration can be seen.

Massachusetts Records.

(N. B. All records given refer to specimens *taken* unless otherwise specified. The names given are the names of those who either shot the ducks or saw them, or on whose authority the record exists.)

Previous to 1845.

Date unknown. Capt. N. J. Wyeth.¹ Fresh Pond, Cambridge.

1845-6.

Two, male and female, Dr. S. Cabot, Jr.,² Newburyport.

1885.

Fall. One, Herbert K. Job,³ Billington Sea, Plymouth.

1895.

Nov. 6. One (young bird), C. J. Paine, Jr.,⁴ Wayland.

1896.

Nov. 26. Male seen, J. E. Bassett,⁵ Nippenickett Pond, Bridgewater.

Dec. 4. Two, Philip Jackson, West Pond, Plymouth.

Dec. 18. Four, 2 males, 2 females, Thomas Arnold,⁶ Silver Lake, Halifax.

1899.

Nov. Five, H. A. Bradford, Russell's Mill Pond, Plymouth.

¹ Proceedings of the Boston Society of Natural History, Vol. II, 1846, 89.

² *Ibid.*

³ Auk, Vol. XIII, p. 201.

⁴ Albert Pitts Morse, Birds of Wellesley and Vicinity, p. 12.

⁵ H. K. Job, Auk, Vol. XIV, p. 206.

⁶ *Ibid.*

1900-5.

One, B. I. Quinby, ¹ Topsfield Marshes.

1900.

Dec. 23. One shot, three seen, G. M. Allen, Truro.

1901.

Nov. 3. Three seen, one shot, F. B. McKechnie, Ponkapoag Pond.

1902.

Nov. 13. One (first one shot and second seen there), Dr. J. C. Phillips, Wenham Lake, North Beverly.

1903.

Nov. 18-30. Female (seen), Dr. Harold Bowditch, ² Wm. Brewster and others, Fresh Pond, Cambridge.

Oct. 29. Eight seen, five shot, A. C. Bent, Halifax.

1904.

Fall. Three, M. Luce, Eastham.

Fall. Eleven, and nine (next day), J. E. Look, Great Pond, Edgartown.

1905.

Two males, in Museum of Peabody Academy of Science, Salem, Ipswich.

Oct. 6. One, J. H. Hardy, Jr., Newburyport.

Nov. 19. One, A. C. Bent, Lakeville.

Nov. 22. Four, A. C. Bent (West Side Gunning Club), Billington Sea, Plymouth.

Dec. 9. Male, female, S. P. Fay, Great Pond, Edgartown.

Dec. 23-31. Male (seen), Walter Deane ³ and Rev. H. W. Wright, Fresh Pond, Cambridge.

1906.

Jan. 1-8. Male (seen, same bird as above), Rev. H. W. Wright ⁴ Fresh Pond, Cambridge.

Nov. 1. Female, J. L. Motley, Sesachacha Pond, Nantucket.

Nov. 4. Five, Dr. J. C. Phillips, Wenham Lake, North Beverly.

Nov. 10. Three males (seen), Rev. H. W. Wright, Spot Pond, Middlesex Fells.

1907.

Oct. 19. Thirteen seen, six shot, immature males or females, A. C. Dyke ⁵ Nippenickett Pond, Bridgewater.

Oct. 27-Nov. 3. Nine, F. B. McKechnie, Ponkapoag Pond.

1908.

Nov. 10. Female (one more seen), Dwight Blaney, Eastham.

Nov. 17. Male (5 more in flock), S. P. Fay and W. R. Baldwin, Great Pond, Edgartown.

¹ C. W. Townsend, *Birds of Essex County*, p. 135.

² William Brewster, *Birds of the Cambridge Region*, p. 115.

³ *Ibid.*

⁴ *Ibid.*

⁵ Auk, Vol. XXV, p. 80.

Dec. 18. Immature male, Dwight Blaney, Eastham.

Fall. One, H. A. Bradford, Plymouth.

Fall. Several small flocks, the largest containing 12-14 ducks, Allan Keniston, Great Pond, Edgartown.

Fall. Eight, Allan Keniston, Edgartown.

Fall. Twelve (total number shot on his place; the 8 above, all or part, may be included in this 12). Geo. D. Flynn, Edgartown.

March 9, 10, 12. Male seen, Rev. H. W. Wright, Chestnut Hill Reservoir, Brookline.

Total number killed on Great Pond, during fall, estimated between 25-30 ducks, Walter H. Renear, Vineyard Haven.

Oct. 31. Seven, J. H. Hardy, Jr., Hingham.

Nov. 2. One male, Rev. H. W. Wright, Spot Pond, Middlesex Fells.

Dec. 18. Five, J. H. Hardy, Jr., Plymouth.

Dec. 30. One male (seen) J. L. Peters, Edgartown.

Nov. 1-8. Flock of 15 decoyed, seven shot, only five retrieved, Cleon Crowell, Long Pond, Harwich.

Two shot (flock of 75 lit in pond, stayed about an hour, then left), Linwood Nickerson, Harwich.

1909.

March 21. Male, J. L. Peters and Rev. H. W. Wright, Chestnut Hill Reservoir, Brookline.

Fall. Two (seen), Dwight Blaney, Eastham.

Fall. Six, H. A. Bradford, Big Sandy Pond, Plymouth.

Fall. One, Ellery H. Clarke, off Cohasset.

Nov. 3. Two, Dr. J. C. Phillips, Wenham Lake, North Beverly.

Nov. 25. Twelve (seen), F. B. McKechnie, Ponkapoag Pond.

Dec. 1909, Jan., Feb., March, 1910. Full plumaged male, seen continuously from Dec. 12 until March 27, 1910, when it disappeared, Leverett Pond and Jamaica Pond, Brookline.

Fall. Twelve seen in one flock, Thomas Arnold,¹ Silver Lake, Halifax.

1909.

Oct. 25-31. Twenty-five went through express office, W. Nichols, Edgartown.

Fall. Four, Allan Keniston, Great Pond, Edgartown.

Fall. Three, J. E. Look, Great Pond, Edgartown.

Fall. Fifteen-eighteen (total number shot on his place by several parties during fall), Geo. D. Flynn, Great Pond, Edgartown.

(As I have no dates for these last three entries it is possible some of these ducks may have been shot during the last week of October and so

¹ Though none were killed at Silver Lake in 1909, during the few years previous a few were taken, but I was unable to get any complete data. In fact, all through Plymouth County I hear of there being Canvas-backs killed, but it is impossible to find out anything definite or obtain satisfactory evidence.

included in the lot of twenty-five that went through the express office between October 25 and 31.)

Nov. 1. Seven seen, one shot, Allan Keniston, Great Pond, Edgartown.

Fall. Caught male alive, still in possession, Allan Keniston, Great Pond, Edgartown.

Nov. 1-7. Four, W. Nichols, Great Pond, Edgartown.

Nov. 1-7. Six, Chester Pease, Great Pond, Edgartown.

Nov. Three, Kapawac Club, Great Pond, Edgartown.

Nov. 19. Two males, two females (six shot from flock of 50, of which two were not retrieved), W. R. Baldwin, Great Pond, Edgartown.

Nov. 19. Large flock of 50 seen, close to beach, W. R. Baldwin, Great Pond, Edgartown.

Nov. 19. Thirty seen in one flock, Allan Keniston, Great Pond, Edgartown.

Dec. 13. One hundred and fifty seen in one flock, W. Nichols, Great Pond, Edgartown.

Dec. 16. Four (fifty seen in one flock), J. E. Look, Great Pond, Edgartown.

Fall. About twenty-five killed in Watcha Pond, E. F. Adams, Edgartown.

Fall. About 50 (estimated) killed in Great Pond, Edgartown, Walter H. Renear.

Fall. Knows personally of 35-40 killed in Great Pond, Edgartown, Allan Keniston.

N. B. Perhaps some will doubt the correctness of these records, since the majority from Martha's Vineyard are from local gunners, on the ground that they may have confused Canvas-backs with Redheads or some other ducks. In the first place, I have been very careful as to whom I have consulted, choosing only those whom I know personally and whose knowledge of the varieties of ducks is unquestioned. In the second place, there is no pond in Massachusetts, or possibly in New England, where there is the number or variety of ducks found here; hence the local sportsmen are remarkably well posted on the different species. It is not the same here as in most places on Cape Cod, where the natives probably know only two or three kinds of ducks. Even the young boys, who perhaps own but a single-barreled gun, and shoot only a short time in the morning before school begins, know not only the distinguishing marks of the ducks close to, but can readily distinguish them on the wing. I doubt if there are many places in the State where such a condition exists.

Summing up from the above table of Martha's Vineyard for 1909, we find that even leaving out of consideration the twenty-five ducks that passed through the express office the last week of October, there were nearly fifty ducks killed on Great Pond, Edgartown,—which is about the number estimated by the gun-

ners. That seems a fair estimate, for it is reasonable to assume that there were other Canvas-backs killed of which there is no record. The only other pond where these ducks are taken on this island is Watcha (or Fresh Pond, as it is sometimes called), and though I could get no definite dates, Mr. E. F. Adams, one of the local gunners, who follows the duck shooting closely during the fall, estimates that there were fully twenty-five Canvas-backs killed there in 1909. That makes a total of approximately seventy-five Canvas-backs killed on the island for the fall of that year. Taking into consideration also the large number seen, it only shows more conclusively that the Canvas-back is increasing in this State where the conditions are suitable. If it were only possible to get all the records for Martha's Vineyard for the last five years we would have a set of records that would be extremely interesting, and it would then be easier to trace back and see precisely how much these ducks have increased the last few years. The year 1909 certainly was a banner year, and undoubtedly the greatest flight of Canvas-backs took place in Massachusetts that to our knowledge has ever occurred. However, we cannot, I think, look upon it as anything so extraordinary, because this duck has increased so steadily since 1905. In fact, it is only reasonable to expect such an occurrence. 1910 may not show another such flight, but undoubtedly there will be a great many of these ducks killed. Though by far the greatest number in 1909 were taken on Martha's Vineyard, the rest of the records are so evenly distributed over the coast of Massachusetts that every county bordering on the ocean came in for its share. This shows that the flight was general and not limited to any locality, and that wherever the feed and conditions were suitable Canvas-backs appeared.

From this table as a whole we see very plainly how these ducks have increased the last few years, beginning with 1905. That seems to be the time when the marked change became perceptible. No doubt because of a more general interest in ornithology lately, more records of our uncommon birds are noted than previously, and that may account somewhat for the records being more complete recently. On the other hand, I was informed by one man that he had not taken pains to note all recent occurrences, as he

did not consider this species as rare as it used to be. This then suggests that there are some recent records of the last year or two that are lacking.

The most interesting side of this situation seems to be the fact that so many are killed on the Island of Martha's Vineyard. With all our large ponds scattered over the State, particularly in Barnstable, Duke and Plymouth Counties, the question naturally arises as to why so many should be taken in this one locality. Many apparently suitable ponds do not seem to attract the ducks at all. On the south side of the island there is a continuous string of ponds, stretching from the extreme eastern end close to the western end. Often they are so close that only a very narrow neck of land separates one from the other. Some of the ponds are open to the sea by a small creek, making them very salt, others are opened only in the spring for a short time to let the herring run in to spawn, making them brackish, while there are some which are entirely fresh. Practically all of the Canvas-backs (at least so far as can be judged from the records) are taken in but two ponds, and these two are entirely fresh. Local gunners tell me that they are taken in no other places, although there are other fresh water ponds than these two. In spite of the fact that the island of Nantucket, only fifteen miles away, has a similar string of ponds on the south side, though not quite as numerous or as large, there is but one definite record for the island. Of course there is only one reason,— that which accounts for the appearance of ducks anywhere — namely, feed, for these two ponds are filled with wild celery (*Valisneria americana*), to say nothing of other good duck grasses. This I was told to be the case several years ago, and although I examined the celery and saw it growing on the bottom in many places, not knowing the plant, I was unable to identify it. However, in August, 1909, the Biological Survey in Washington sent their Assistant Biologist, Mr. W. L. McAtee, to examine Edgartown Great Pond, which is one of the two where the ducks are killed, and to report on the various kinds of feed found growing there. In replying to a letter enquiring as to the results of his investigation, he says: "As you mentioned that you would be interested to hear the result of my examination of Edgartown pond, I take the present opportunity of addressing you. Taking

a boat near the pumping station we went through a long lead, which is filled with a pond weed (*Potamogeton nuttalli*) which is a fair duck food. We then entered a cove and followed it up around the first point to the right and into the next cove. I found the bottom of these coves carpeted with wild celery and a species of pond weed (*Potamogeton perfoliatus*), known as redhead or duck grass. There were no other important plants. I was very much interested in finding wild celery there, as I had heard that pond is the best in the State for Redheads and Canvas-backs...."

This letter is not only interesting but conclusive as to the reason for the abundance of the ducks in this pond, for everyone knows the attraction wild celery has for Canvas-backs. What I have been unable to solve is how and when the celery took root there. For although I have asked and written a number of local gunners no one seems to know whether it was planted there artificially or not. The theory often advanced that ducks spread the growth of aquatic plants by carrying the small seeds in particles of mud adhering to their feet and legs might possibly account for it.

Though this plant explains why the Canvas-backs frequent certain ponds in preference to others, it does not give the reason for their increase in numbers in this State. In the first place, this wild celery has undoubtedly been in the pond a great many years, for the gunners do not speak of its being a new growth, so that does not explain their recent increase. When I first went down there in the fall of 1905 I saw it growing then, though I was not sure it was the true *Valisneria americana* until I saw Mr. McAtee's letter several years later. Furthermore, Edgartown Great Pond has, as far as the memory of the old gunners go, always been a great resort for ducks, especially Greater Scaups and Redheads. These two, in this order, are the commonest ducks, and to-day at the height of the season in November there are six to eight thousand bedded in the centre of the pond. And although the old gunners say there were many more in years past, I am rather inclined to doubt their statements, for the beds of ducks to-day far surpass those of any other place in this State, if not in New England. Therefore it does not seem reasonable to suppose that even when there was less shooting than there is at present the ducks were any more numerous.

With this big increase in the flight of Canvas-backs during the fall migration it will be interesting to look for the cause, for there must be some fundamental reason. Undoubtedly the best place to begin investigations is on their breeding grounds, and from there follow them on their fall migration to their winter feeding grounds in order to see not only what are the general routes taken, but also how and why the North Atlantic coast is reached.

As we all know, they breed in the west central interior of Canada, principally in the region lying east of the Rocky Mountains, ranging as far as the 100th meridian. Of course their breeding grounds cover more territory than this, but the center of abundance seems to lie within this area. From here they start on their south, southeastern and eastern migrations in early fall, and in general two main routes seem to be taken; one, south, spreading out on crossing over into the United States and splitting into two routes — the first, due south across country to Texas and Mexico, the second, down the Missouri and Mississippi valleys to Louisiana and Texas. The second main course is easterly following the border between this country and Canada and across the Great Lakes. This is the only one that interests us, for it is by this route that it reaches the North Atlantic coast and Massachusetts.

Early in October the flocks begin crossing Lake Erie, and here the easterly course of this main body seems to terminate, for they now take a more southerly direction, by which they reach the region about Chesapeake Bay and the sounds further south on the coast of North Carolina. However, some birds seem to continue this easterly course, coming directly across the northern part of Massachusetts. Because most of the birds are killed south of Boston it may be that the flight, after all, strikes the coast at this point. Still, I think not, for recent records north of Boston show there has been a flight there as well. On reaching the coast at this point they then turn south, stopping off at suitable feeding grounds, and because they are better and larger in the ponds of Martha's Vineyard the majority settle there, attracted further by the large beds of Scaups and Redheads. A less probable theory would be, that, crossing New York State (which they do, for some are taken and seen regularly in the larger lakes such as Cayuga) they strike Long Island Sound and reach Massachusetts from

that direction. One man informed me that while shooting on Martha's Vineyard he had seen several flocks come from the westward in the direction of Long Island Sound. However, it is impossible to tell whether these were migrating ducks or whether they were merely returning to the pond which they had left at sunset the previous evening,—the usual habit of most of the ducks there. Furthermore, this theory seems improbable for Dr. W. C. Braislin¹ in 1904 considered them "sufficiently rare on Long Island as to be worthy of record." Whether they have increased since then or not I do not know.

Now that the possible routes have been taken up the last consideration is the cause for any change in the course of migration. One reason may be that, because the Redheads and Canvas-backs breed in more or less the same territory and that the former have been very common on Martha's Vineyard for a good many years, some may follow the route taken by the Redheads to the Massachusetts coast. Also, as the Mississippi Valley becomes more and more settled, fewer may take that course, and as the sloughs near their breeding grounds on the prairies are drained to make way for the wheat fields, they may be forced further and further north each year to breed and so take a more easterly direction. Lastly, it may be due to the fact that they have been so persecuted by sportsmen and market hunters on the Chesapeake Bay and North Carolina sounds in years past. This may be a partial explanation for their striking the Atlantic coast so far north.

However, the fact remains that their numbers are increasing rapidly in Massachusetts. Five years ago they were considered on Martha's Vineyard, as elsewhere, as very rare. That year I killed a pair, and it was of sufficient interest to be commented on in the local paper. Now very little thought is given to these ducks being shot. In talking with the gunners on the island the opinion as to its increasing numbers is general, and they are as unanimous in maintaining that it is getting to be quite common now as they are of the fact of its rarity five or six years ago. Certainly, with this abundance of recent records, I hardly think the Canvas-back can be looked upon any longer as a 'rare species'

¹ Auk, Vol. XXI, p. 288.

in this State. It at least deserves to be called 'locally common,' or else considered as 'increasing in abundance.' The developments as regards this situation for the next few years will undoubtedly be of great interest.¹

NOTES ON THE BIRDS OF THE SUNKEN LANDS OF SOUTHEASTERN MISSOURI.

BY ARTHUR H. HOWELL.

THE field work of the Biological Survey for the season of 1909 included a collecting trip in the 'Sunken Lands' and swampy river bottoms of southeastern Missouri — a region famous for the vast numbers of waterfowl which stop there on their migratory flights, and interesting also as the summer home of several rare birds, notably Bachman's and Swainson's Warblers.

The characteristics of this region have been described in several articles by Mr. O. Widmann.² It is perhaps sufficient to note here that the lakes and swampy areas, which cover a large part of seven counties in Missouri and portions of Tennessee, Kentucky, and Arkansas, were formed by a subsidence of the land following a series of earthquakes in 1811-1812. Evidences of this subsidence are still seen in the presence in some of the lakes of dead stubs of old cypresses standing in deep water far from the present shore line. This swampy region forms a northward extension of the Lower Austral Zone, and for that reason a study of its

¹ Not only are Canvas-backs becoming more numerous, but Greater Scaups and Redheads have also noticeably increased lately. They are now seen and shot in some ponds on Cape Cod and in Plymouth County, which they never frequented before; and in some localities, where they formerly were met with only occasionally, they are now becoming quite common, so that their arrival during the fall migrations can be depended upon with a reasonable degree of certainty. This flight, or rather change in the migratory route, seems to include these three varieties of ducks. The question is whether this condition is only temporary or whether it is to be permanent.

² Auk, XII, 1895, pp. 350-355; XIV, 1897, pp. 305-309; 'Birds of Missouri.' Trans. Acad. Sci. of St. Louis, XVII, No. 1, 1907, pp. 14-16.

breeding birds is of special importance in order that the northern limits of such forms as occur in that Zone may be determined.

The localities visited in Missouri are as follows: St. Francis River, about 12 miles north of Cardwell, Dunklin County (April 25-30); Kennett (May 1, 2); Portageville (May 3, 4); Cushion Lake, 7 miles southeast of Portageville (May 4-7).

The following list includes only the rarer birds, and those whose subspecific identity has been a matter of conjecture.

Podilymbus podiceps. PIED-BILLED GREBE.—Three or four were seen in the wooded swamps along the St. Francis River and one on Cushion Lake.

Anhinga anhinga. SNAKEBIRD.—One was seen on Cushion Lake.

Anas platyrhynchos. MALLARD.—A few Mallards are reported to breed in the more inaccessible portions of Cushion Lake.

Aix sponsa. WOOD DUCK.—Wood Ducks are probably more numerous in this region than in any other part of the United States, and this in spite of the fact that many thousands are shot every fall and winter. At the time of my visit they were breeding and comparatively few were seen. I did, however, see from one to six each day that I was in the swamps. They are very wary and fly swiftly up and down the bayous, mainly in pairs, uttering their characteristic call notes. Several times a pair was flushed from the water in the timbered 'sloughs' where they were feeding.

Branta canadensis. CANADA GOOSE.—A few geese are said to breed in the vicinity of Cushion Lake, where a local hunter told me he had caught a few young geese every spring.

Botaurus lentiginosus. AMERICAN BITTERN.—Bitterns were very numerous in the St. Francis River marshes, April 25-30, and were frequently heard 'pumping.'

Ardea herodias. GREAT BLUE HERON.—A few were seen both on the St. Francis River and on Cushion Lake.

Rallus elegans. KING RAIL.—Two were seen and one collected May 3 in a wet ditch along a railroad at Portageville.

Fulica americana. COOT.—Several small companies of two to five were seen in the reedy portions of the St. Francis River.

Gallinago delicata. WILSON'S SNIPE.—Two were seen May 1 at Kennett and two May 3 at Portageville.

Buteo lineatus. RED-SHOULDERED HAWK.—One was collected April 29 in the timber near the St. Francis River, and on May 7 a nest was found in a small tree in a dense thicket near Cushion Lake. The young in this nest were about half grown. The male bird was collected.

Dryobates villosus auduboni. SOUTHERN HAIRY WOODPECKER.—Not very common, but a few were observed both on the St. Francis River and at Cushion Lake. At the latter place a breeding male was collected.

Dryobates pubescens medianus. NORTHERN DOWNY WOODPECKER.—Several pairs were seen on the St. Francis River and on April 28 a breeding female was collected.

Colaptes auratus. FLICKER.—Rather scarce in the swamps but a few were seen in the drier parts of the timber at Cushion Lake and St. Francis River. A specimen collected at Cushion Lake seems to furnish the first record of this southern form of the Flicker from Missouri.

Corvus brachyrhynchos. CROW.—Crows are quite scarce in this region; only three were seen at Portageville and none at all in the broad fields at Kennett.

Agelaius phoeniceus. RED-WINGED BLACKBIRD.—Redwings are very abundant in the marshes along the St. Francis River and at the time of my visit they were paired and beginning to build their nests. Specimens taken there belong to the typical race. They are not common at Cushion Lake.

Sturnella magna argutula. SOUTHERN MEADOWLARK.—Fairly common at Portageville where a specimen referable to this form was secured. They were scarce at Kennett, and along the St. Francis only one was seen, in a clearing two miles back from the river.

Lanius ludovicianus [migrans ?]. MIGRANT SHRIKE.—Scarce in this region; only one pair was seen near Kennett; one of these birds was carrying nesting material into an oak tree on the edge of a plowed field.

Protonotaria citrea. PROTHONOTARY WARBLER.—This is an abundant and characteristic inhabitant of the swampy bottom lands. They were present in numbers along the St. Francis River by April 25, and on May 7 at Portageville I saw one carrying nesting material into a fence post by the roadside.

Helinaia swainsoni. SWAINSON'S WARBLER.—Not common, but a few were heard singing in the swamps along the St. Francis and two specimens were collected. When singing they sit in a tree at a height of 10 or 15 feet—often over water. The song is loud and clear, consists usually of five notes, and resembles somewhat the song of the Louisiana Water-Thrush.

Vermivora bachmani. BACHMAN'S WARBLER.—Fairly common along the St. Francis River and about Cushion Lake. They were first noted April 28 and 29 at St. Francis River when three specimens were secured and another one heard, all in a brushy clearing in the drier part of the swamp some two miles from the river. The birds taken were males and were singing from low trees at a height of about 15 feet from the ground. The song is short and sounds like a faint, weak song of the Worm-eating Warbler, but has the 'burring' quality of the song of *Vermivora pinus*. At Cushion Lake they were common and many were seen singing in the cypresses over the water. They are also fond of thick woods grown up to cane (*Arundinaria*). A female taken May 5 was evidently incubating at the time.

Dendroica dominica albilora. SYCAMORE WARBLER.—One was collected May 6 from a cypress on Cushion Lake—the only one noted.

Geothlypis trichas. NORTHERN YELLOW-THROAT.—Fairly common in the swamps and heavy timber. Specimens from Portageville and St. Francis River are referable to the northern form.

Telmatodytes palustris iliacus. PRAIRIE MARSH WREN.—Rather scarce in the marshes along St. Francis River and on Cushion Lake, but perhaps not all had arrived from the South. Two specimens were taken at the above localities.

A SERIES OF NESTS OF THE MAGNOLIA WARBLER.

BY CORDELIA J. STANWOOD.

THE warblers were late in 1907. The cold, backward spring was behind time in unfolding catkin and leaf whereon the insect hosts prey, and the warblers who live on the insect life keep pace with the resurrection and birth of moth and butterfly, mosquito and aphid, caterpillar and beetle. It was the 17th of May before I heard the *weechy, wee-chy, wee-chy*; or the *wee-o, wee-o, wee-chy*; or the *wee-chy, wee-chy, wee-chy-tee* of the Magnolia Warbler, and all of a week later before I saw one. After that they came in flocks, those gorgeous, floating flowers from their winter homes in Panama and Mexico.

The Magnolia is one of the most beautiful of the birds that comes to nest in the cool north. While migrating the bird is noticeably restless, even for a warbler, keeping well hidden within the evergreens where it feeds much of the time, although it makes frequent excursions to the larches, gray birches and other trees of the swamp and its surrounding woodlands.

On the 13th day of June, I took my luncheon for a day in the woods, not that I was going far, but the days are all too short when birds are migrating and nesting, and I was bent on hunting birds' nests. Towards noon my efforts were rewarded by finding the nest of a Magnolia Warbler nearly completed. Two days later, I came upon a second nest of the same bird, and six days later a third. On the 15th day of July, I just missed placing a fourth. By accident, I discovered the empty nest later.

All these nests were composed of similar materials,—hay, stems of cinquefoil, a plant fibre resembling hair, horsehair, plant down and spider's silk, yet each one had a character of its own, due to the greater proportion of one or other of the materials used in the nest, and the way in which the nest was placed in the tree.

The first nest was the most exquisite Magnolia Warbler's nest I have ever found, and I have been so fortunate as to locate at least twenty-five of them. In this nest some hay and the fine tops of cinquefoil served as a foundation, but the greater part of the small mansion consisted of a fine black vegetable fibre resembling horse-hair. So much of this black, hair-like material was used, that when the edge was covered with down from the willow-pod, a person looking at the dainty abode in its setting of fir twigs could see nothing but the jet-black lining and the fluffy, silvery plant-down around the throat of the nest. The structure was partly pensile, being bound with spider's silk to the two branches at right angles to the main stem. The front part of the bottom was supported by the branches beneath. The interior was modelled by the dainty curves of the mother bird's breast. It was built in a small fir two feet from the ground, surrounded by a growth of fir and gray birches.

The second nest consisted mostly of cinquefoil stems, with a few strands of hay, a lining of horsehair, and a few dots of plant down fastened over the exterior of the nest with almost microscopic meshes of spiders' silk. The cinquefoil stems make a very attractive nest. It is so brittle, it cracks every two or three inches, giving the nest a light, angular appearance which is very different from the effect produced by using hay. The dots of plant down, with the almost imperceptible silk veiling, add also to the effect of lightness, yet a Magnolia Warbler's nest is a very substantial little affair. It was placed close against the stem of a fir where the ascending branches form a partial crotch, and was about three feet from the ground.

The third and fourth habitations had the appearance of being shallower. They were made of about equal parts of hay and cinquefoil, and lined with black hair-like plant fibre and a few horsehairs. The outside was strengthened with plant down and spider's silk, and it was safely anchored to the surrounding twigs

with spider's silk. One of these nests was placed on a forked branch near the end of a long spruce bough some three feet above the ground; the other between the extreme tips of the branches of two little fir trees, at about the same height as the former.

A typical nest was about $1\frac{3}{4}$ inches wide inside at the top, and $1\frac{1}{4}$ inches deep, the bottom a half inch thick, and the walls at the top three fourths of an inch thick. All the nests somewhat resemble in shape the bowl of a spoon. In three nests there were four cream-white eggs in each, with the pinkish tinge that nearly all freshly laid eggs have, spotted in a ring around the larger end with reddish brown, umber, and black. There were minute specks over the entire egg.

In the first nest, which was unique in many respects, the eggs were marked with burnt umber all over the larger end, as if a person had scrawled over them with a Japanese brush.

The eggs were laid on four successive days before 8.30 A. M. On the fourth day the female took up the task of incubation before 10.30 A. M.

If one comes cautiously to the nest while the bird is incubating, the startled little mother usually slides silently into the undergrowth and remains there. Once when I waited by the nest a long time, the bird returned to scold, but kept carefully out of sight and chirped very little. Another bird when flushed from the nest flew to a near-by tree and fell like a dead weight from the limb with (apparently) a broken wing.

In twelve days the eggs "had wings, and beak, and breast."

On the fourth day one of the nestlings opened its eyes, tiny slits, but it closed them quickly as if afraid of the light. The fledglings were burnt orange in color, covered with long, dark brown down. The quills and feather tracts were well indicated.

On the eighth day the nest was empty, but I saw the young birds fluttering through the trees with the parent birds, only a few yards from the nest. Probably the violent rain and thunder storm of the day before had hastened their departure. (The other nests were either destroyed or the young eluded my vigilance.) When the young birds were in the trees near the nest, the old bird exposed herself most needlessly. All her caution seemed to have vanished. It was an effort to attract attention to herself from the young birds, who were immature and noisy.

Although the nests of the Magnolia Warbler were so similar, I had actually to see the bird sitting on three distinct types of nest before I could believe that all the structures were made by the same species. The third and fourth types were sufficiently similar to be identified.

In 1908, I had the opportunity to make a careful study of four more Magnolia homes. May the 13th, the birds had just begun to place the lining in a nest about two feet up in a low spruce. Both birds brought cinquefoil and black plant fibre to the nest, and entered it to put the materials in place. The female seemed to do most of the work. She pressed the material into place with her breast, moving around gradually, so as to make the sides uniform. When the birds detected my presence, which was almost immediately, they always ceased coming to the nest for a time. The rainy weather seriously interfered with work on this nest. The last material was added six days after the nest was started.

Three days after the nest was completed, on June 5, the bird laid one egg about half as large as the ordinary Magnolia egg. That would indicate that she was a young bird and this her first nest. On the evening of the twelfth day of incubation, an excessively hot day, there were two young birds in the nest. Probably one young bird died from the hot sun rays pouring down upon it while the parent bird was procuring food; the small egg remained unhatched. Of the two nestlings, one was much stronger and larger than the other.

On the third day, the eyes of the nestlings were beginning to open, and the feather tracts were indicated by dark brownish blue spaces. On the fifth day the wing quills were three fourths of an inch long, and the body well covered with pin feathers.

On the seventh day the wings of the young Magnolias were a mixture of yellow-green, black, and blue-gray, with buffy wing-bars. The head and back were dark brown, the breast heavily striped with grayish brown, and the belly was yellowish. On the morning of the tenth day, June 30, the nest was empty. I visited this nest every day for thirty-one days. If my frequent visits did not hasten the exit of the young birds from the nest, it would be strange.

June 3, 1908, I came upon two Magnolias just starting a nest in

a fir three feet from the ground. First bits of spider's silk were laid in the shape of the nest on the brush-like needles of the fir. The bird seemed to secure the spider's floss by rubbing it against the twigs with her breast. Later bits of hay or cinquefoil stems were bent in the shape of a loop or swing and secured by the silk. The next step was to bend the material in the shape of a circle around the top, always pressing it into shape with the breast and securing it at intervals with knots of spider's silk. A frame similar to this seems to be constructed by the *Magnolias* always before filling in the foundation. The birds were three days placing the foundation of hay and cinquefoil, and three days lining the nest with horsehair. I have seen nests that I thought might have been constructed more quickly, so little material was used either for foundation or lining.

The other two nests were similar to those I have described except that one was five feet up, and some of the red, hair-like fruit stems of bird-wheat moss were used in the lining. This was placed between the tips of the branches of two low trees. The bird that built the high nest with the colored stems in its lining, laid the smallest eggs I have ever seen in a clutch of this species, and was extremely gentle. Unfortunately crows or squirrels carried off the eggs so that at this point my observations ceased. The small eggs would indicate they were laid by a young bird, and the somewhat exposed site suggest that she was inexperienced.

In 1909, I found five nests similar to the others, with these slight differences: One was placed seven feet up in the tips of a long spruce branch and lined with coarse dark brown roots such as the Hair-bird uses for the exterior of her nest; another had a middle lining of the fine tips of meadowsweet twigs, which was coarse material for the *Magnolia* to handle. This latter was placed in the axis of a fir branch two feet from the ground.

The eggs of this year were much blotched with reddish brown or umber, sometimes in the wreath around the larger end the blotches being confluent; at other times the blotches pretty well covered the larger end or extended far down the sides of the egg.

On the second day of July, 1909, I came upon parent birds with young. Both old birds flew around me, chirping with consternation when I paused to chat with the dainty mite that

confronted me on a low fir. The mother spread both wings helplessly and fell from branch to branch and from low trees and stumps to the ground. The male bird contented himself with flying around with his mate and chirping. This would indicate that the male assists his mate in the care of the young after they leave the nest.

Summary of observations of Magnolia Warblers, 1905-1910.

1905, first seen, May 14.

1906, first seen, May 19.

1907, May 17, first seen; June 14, adding down to nest; June 15, foundation, no lining; June 19, 4 eggs, began incubating to-day; July 15, nesting; Aug. 1, same nest empty.

1908, May 15, first seen; May 30, foundation of nest with 3 days' work done; June 3, nest completed. June 3, nest just begun; June 9 nest just completed.

1909, May 13, first seen; June 5, nest started; June 16, bird incubating; June 19, bird incubating; June 13, bird incubating.

1910, May 27. Framework of nest started four feet up in a clump of pine. June 1, beginning to line nest with pine needles, horsehair and seed stems of bird-wheat moss. June 5, 2 eggs laid. June 20, young birds out of shell — 13 days. June 22, eyes not open; a dark spot on the head, a dark line down the back and on the edge of the wings indicate the feather tracts. Third day (morning). Wing quills $\frac{1}{4}$ inch long. Fourth morning; quills $\frac{1}{2}$ inch long, eyelids well separated, color deepened to dark burnt orange. Fifth day, wing quills $\frac{3}{4}$ inch long. Sixth day, tips of feathers just beginning to protrude beyond the sheaths, and head covered with downy feathers. Eighth day (evening) young covered with gray and brown downy feathers; tips of tail feathers showed buffy, and the wing-bars were conspicuous; much of the baby down still clung to the tips of the feathers; birds alert but not timid. Ninth day (morning), birds not timid; may leave at any time. Tenth day, June 30. Nest empty. One of the four eggs not fertile.

SOME RARE WILD DUCKS WINTERING AT BOSTON,
MASSACHUSETTS, 1909-1910.¹

BY HORACE W. WRIGHT.

Plates XIX and XX.

UNDER the beneficent protective game-laws of the State, by which lakes and ponds within city parks and state reservations are made safe and secure for resident and migrant birds from all shooting and interference, it has come to pass that a little company of wild ducks rarely seen hereabouts is wintering within the city limits. About four miles out from State Street in the West Roxbury district lies a pond, covering an area of sixty-five acres, known as Jamaica Pond. It is beautifully set in what is now Olmsted Park. On the easterly side of this pond rises a rather steep bank with growth of pine, giving the name "Pine Bank" to the former private estate. Here is now the administration quarters of the city Park Commissioners. On all sides, except the Jamaica Plain side which is to the southeast, the land rises gradually, notably on the northerly and westerly sides, where are extensive private estates beyond the limit of the park. Along the westerly shores, which are now the park lands, was the home of Francis Parkman with its rose garden. The pond, therefore, has by nature a protected setting in the midst of a beautiful environment. It is deep in the middle; the depth has been estimated to be fifty-five feet. But on the westerly side and in a cove reaching northward the waters are comparatively shallow. It is the largest natural piece of fresh water within the limits of the city. And it was the first source of water supply for Boston; the conduit composed of pitch-pine logs bored out like pump-logs was completed in 1795. But long since it ceased to be a part of Boston's water-system. Into the pond on the northwesterly side flows a brook. When winter comes and covers all the ponds with ice, the formation of which Jamaica Pond resists successfully for a time,

¹ Read before the Nuttall Ornithological Club, Cambridge, Mass., February 21, 1910, with some slight subsequent additions and emendations.

along this northwesterly shore where the brook enters and a breeze seems always to come down from the northwest moving the waters, an area continues open even after the remainder of the pond is frozen,—an area successively diminishing night by night of severe frost. So the water-fowl which come to the pond are able to remain late, sometimes into early January.

Next northward from Jamaica Pond, following the parkway, lies Ward's Pond set in a small basin and covering somewhat less than three acres. Here occasionally a wild bird alights and remains for a time. Next, proceeding northward still, are three pools fed by active springs which prevent the freezing of the waters. The largest pool is known as Willow Pond. Small as this is, occasionally it receives a wild duck or two in midwinter, when the weather is severe and closes up the other ponds. Next lies Leverett Pond, which in earlier years was a swamp, but was converted by the Park Commission into a pond of twelve acres. Without much width it stretches out well in length and lies between hilly ridges. On the easterly side is Parker Hill in Boston; on the westerly side, the High Street district and its elevated lands in Brookline. Leverett Pond receives Muddy River, which forms the boundary between Boston and Brookline and flows through the Back Bay Fens into the Charles River Basin. The entrance of the river into Leverett Pond, although it is a very insignificant stream, serves to keep an area of open water toward its northerly end and except in very cold weather even across to the opposite shore. In the severest cold waves of the winter the open water is not entirely lost, although it may be diminished to an area not more than fifty or sixty feet across. Here a flock of park Mallards has wintered as usual. Throughout the year a small flock lives on this pond and breeds. At Jamaica Pond a much larger flock breeds, and some of these Mallards, when the keeper gathers in his flock in early winter for life in houses and pens, escape and secure a more natural life at Leverett Pond. So the flock on this pond is increased by an accession from Jamaica Pond. It has numbered about sixty ducks the present winter. Two European swans have lived throughout the winter with them. Bridle paths and park roads border these ponds, in some places closely, in other places somewhat more

remotely. There are walks along the shores throughout their extent. Thus, being attractive spots in the park-system, many persons move daily afoot, on horseback, or in carriage or automobile, and the situation is not isolated, but on the contrary is in very close touch with the town centre of Brookline and in the pathway of pleasure travel.

On these open waters of Leverett Pond five species of wild ducks have wintered; namely, Baldpate (*Mareca americana*), three drakes and one duck; Redhead (*Marila americana*), a duck; Canvas-back (*Marila vallisineria*), a drake; Lesser Scaup (*Marila affinis*), a drake; and Ring-necked (*Marila collaris*), a drake.

All of these birds first appeared in Jamaica Pond. There is scarcely any basis for doubt that they are the same birds which successively came there in the autumn and early winter and remained to the complete freezing up of the pond. This took place on December 30. The small area which had remained open and grown somewhat smaller night by night was then closing up. Thus the ducks were given notice that they must quickly leave, and the operations of the park employees on that day precipitated their departure; for it was a matter of mercy and necessity that the park ducks should be gathered in. This was done by the use of a stretched seine or netting held around the flock by several men, by means of which they were slowly drawn into a pen in which they could be conveyed to winter quarters. The wild ducks naturally took wing and dispersed. But it proved that they did not go far and were not long lost to view. The four Baldpates passed at once to Chestnut Hill reservoir, which is a part of the city's water supply and also within the city limits, where the water pumped in and rising forcibly to the surface serves to keep a considerable area open in the coldest weather. This reservoir is about two miles distant across country from Jamaica Pond. The Baldpates remained here but a brief time, however, for all four were seen on Leverett Pond on January 5. The Redhead and the Canvas-back were not located for two or three days, but they could not have gone far, for they both came back and were seen on their return on Leverett Pond. No Lesser Scaup drake had been seen on Jamaica Pond later than December 24; two had remained there up to that day. January 3 a Lesser Scaup drake

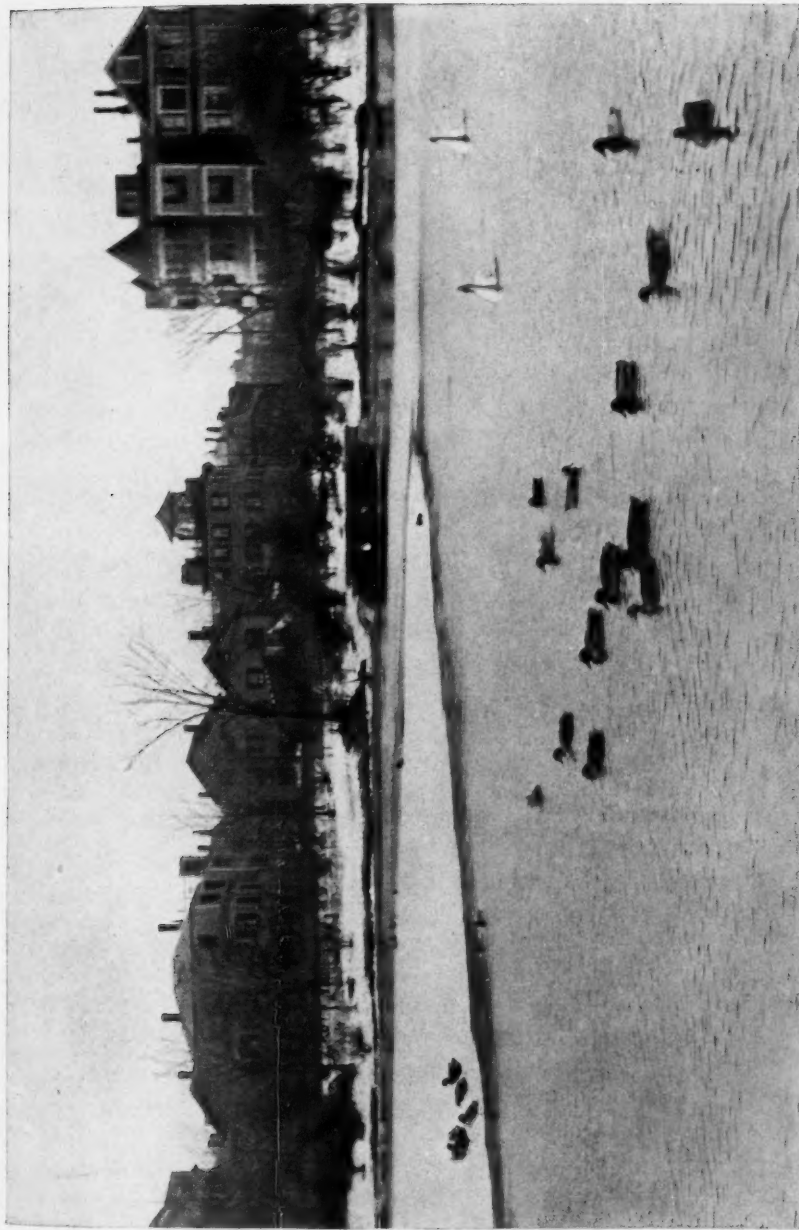
was with these other ducks on Leverett Pond. If he were one of the two Jamaica Pond drakes, his absence had been longer than was that of the ducks of the other species, but it would seem probable that he was one of the two and had rejoined his former companions. The Ring-necked drake was absent from Jamaica Pond after December 27. On January 5, he appeared on Leverett Pond, having joined the others, perhaps on the preceding day. So constantly have these wild ducks been visited by myself and many local observers that little has occurred in connection with them which has not gone on record. When they left Jamaica Pond and I found only the Baldpates on Chestnut Hill reservoir, I concluded that the others had gone for good, and I did not for several days pass through Olmsted Park where Leverett Pond is situated. But I have learned from several observers who did pass through that they came to this pond successively between January 2 and 5, all being present on the last date. None were present, I am credibly informed, on January 1 or December 31. It is not improbable that in the brief absence of these ducks between their life on Jamaica Pond and their life on Leverett Pond, except in the case of the Baldpates, they were on the waters of the Back Bay Fens near the Somerset Hotel, where another park flock of Mallards lives. I have no definite records, however, to show that such was the case. When, however, on February 19 they disappeared again for two days, these waters through to the Charles River Basin were carefully searched by several observers, and they reported that the ducks were not there, neither on Chestnut Hill Reservoir nor on Fresh Pond in Cambridge, where were open waters. Where, therefore, they went in these and subsequent brief absences has not been ascertained.

In answer to queries whether any of these ducks spoken of as wild might be park ducks which had escaped, it may be said that the only such source from which any one of them could have come is Franklin Park, where is kept on a small pond during the summer and housed during the winter a collection of ducks consisting of several species. But there are no Baldpates in this collection, neither Canvas-backs, Lesser Scaups, or Ring-necked Ducks. In 1906, so I am informed by the assistant superintendent, a pair of American Widgeon, or Baldpates, was purchased and placed on

the pond in the park. They disappeared, he says, some time ago, meaning, as I understand from others, two years or more ago, and he knows of no other Widgeon there at any time. No Canvasbacks have recently been members of the collection. I never saw within it any Scaups or Ring-necked Ducks. Redheads, both drakes and ducks, it contains. But the Redhead duck of Jamaica and Leverett Ponds is distinctly larger and finer than these Redheads which have lived and bred in captivity. Since all the evidence goes to show that the ducks of the other four species are wild ducks, which have deliberately chosen the waters of these two ponds for their winter home, it seems quite fair to assume that the fifth species, the Redhead, is also a wild duck. I have, moreover, consulted the park department, represented by those who care for the ducks, as to whether they missed a Redhead duck from their flock at the time of the appearance of this one on Jamaica Pond, December 27, and have learned that they did not. The testimony is that in the gathering in at Franklin Park they lost only a Wood Duck drake. The behavior of all these ducks also confirms the idea that they are wild ducks, since in every case they were much more shy upon their arrival and gradually grew more trustful through association with the park Mallards, these being often fed by the children. So the fact that these ducks have come to receive of such offerings at Leverett Pond must not be taken as invalidating the necessary assumption of their wildness by nature. In other seasons other wild ducks of various species have behaved similarly on these ponds and have become very tame and unsuspicious of harm, when in association with the domesticated Mallards.

More detailed accounts of the arrival and stay of these five species of ducks will now be given, and, incidentally, such previous recent records of other ducks of these species on these and neighboring waters as I myself made or have obtained from local observers.

BALDPATE.—Two Baldpate drakes and one duck were first observed on Jamaica Pond on October 19. Members of the Norfolk Bird Club of Brookline report that they arrived on the 17th. These three Baldpates were constantly seen by myself and others from these dates up to November 29, when an additional drake arrived. The four then remained to the time of the closing



CANVAS-BACK, BALDPATE, AND (NEAR THE ICE) THE LESSER SCAUP AND RING-NECK.
From a photograph by Mr. Frank W. Jones.

of the pond with ice, December 27 being the last day that they were seen together on this pond. On December 28 and 30, two drakes still remained on the pond, but one drake and the duck had gone to Chestnut Hill Reservoir. December 31, all four were on the reservoir and continued there, as far as we know, to January 5. On that day, Miss Bertha Langmaid informs me, all four were seen by her on Leverett Pond. Here they have remained, with the exception that on January 17 there was a scattering of all these wild ducks for some reason and one Baldpate was seen by me on the reservoir, the duck on Leverett Pond, and, I am informed, two drakes were seen on the small Willow Pond next southward in the park. These birds are finely plumaged, the drakes showing their characteristic colorings very beautifully. The duck is somewhat smaller than they, and she is more nimble when bread is thrown to the combined flock, although all the four Baldpates readily swim near shore, showing little fear, while they manifest a degree of wariness.

The previous season, 1908-9, a Baldpate drake wintered on Jamaica and Leverett ponds. He was first observed on Jamaica Pond, December 15, and remained there up to nearly the end of January, when after a few days' stay at the reservoir he came to Leverett Pond. Here he continued up to April 5, being last seen by Mr. James L. Peters. He was joined by a Pintail drake (*Dafila acuta*) on February 22, which continued on the pond for a month and was last seen on March 21. This Pintail drake was joined by a female on March 12, which stayed beyond the departure of the drake and was last seen on March 28.

REDHEAD.—I had observed no Redhead on Jamaica Pond the present season until December 27. On that day a female was seen swimming about closely with the Canvas-back drake. It was plainly identified as a Redhead, as it was afterward on Leverett Pond by several fellow members of the Nuttall Club. It was again seen by me on the following day. But in the disturbance, attending the gathering in of the park flock for housing on December 30, this Redhead was lost sight of in my visit on that day and was not traced for the two intervening days to January 2, when she was seen on Leverett Pond by local observers. So far as known, she has daily continued there with two or three exceptions when

for a day or two days she has been absent somewhere with her companions. This Redhead duck is intermediate in size between the Ring-necked drake and the Canvas-back drake being perceptibly larger than the former and somewhat smaller than the latter. The bill is dark slate with a black tip, and no obscure band is apparent. Dr. Charles W. Townsend has called our attention to the fact that this Redhead as well as the Canvas-back dive with wings close to the side, as do the Scaups.

Mrs. Edmund Bridge informs me that she saw a female Redhead on the pond on November 30. This bird did not remain. Two other records on Jamaica Pond will be of interest in this connection. On December 23, 1905, in company with Mr. Gordon B. Wellman, a Redhead drake was seen. He was with Black Ducks and Mallards and came in close to the shore with them, while we were at some distance. By careful approach we had a very near view of this handsome drake before he swam farther out. It was a day when a light rain was falling and the same day on which a Canvas-back drake was found on Fresh Pond in Cambridge. Another earlier record is that of a Redhead duck seen on November 17, 1906.

There are two Fresh Pond records in recent years, given in Mr. William Brewster's 'Birds of the Cambridge Region,' namely: On October 21, 1902, Mr. Richard S. Eustis observed a flock of five Redheads, two males and three in the plumage of the female. Mr. Brewster saw two males, presumably the same birds, he thought, on November 14 and 30 and December 1. In 1903 a Redhead drake was seen by Mr. Walter Deane on December 6, and on the 11th, 17th, and 21st of the month either the same or a similar bird was observed by Mr. Harold Bowditch. On the waters of Chestnut Hill Reservoir Mr. Richard M. Marble and Mr. Barron Brainerd saw a flock of six Redheads, four drakes and two ducks, on March 21, 1909.

CANVAS-BACK.—I first saw the Canvas-back drake on Jamaica Pond on December 14. Mr. J. L. Peters had seen the bird on the 12th. It was constantly seen by me and many interested observers on this pond up to the closing day, December 30. Four days later Miss Bertha Langmaid saw it on Leverett Pond, and there it has remained, constantly visited and admired, with the exception



CANVAS-BACK AND TWO BALDPATES.
From a photograph by Mr. Frank W. Jones.

100
100
100
100
100

of one day, January 17, when this little company got scattered but quickly came together again, and an occasion in late February, when it was absent for two days with its companions, but again returned. This drake is regarded as a very fine type of the species. The red iris is easily discerned when the bird is near, and the heavy black bill extending almost straight out from the line of the crown is very apparent even at a distance. He and his other wild companions succeeded in getting some of the bread which during a visit of observation Mr. Francis H. Allen and I threw to them, although the park Mallards were rather too quick for these wild birds to secure much in this manner of feeding and were more ready to come near than they. But these ducks afforded us very close views; the range sometimes was not more than twenty-five or thirty feet. A month later these ducks had become still less timid and allowed Mr. E. E. Caduc and myself to stand as near as fifteen feet of them, while they actively fed on the bread thrown to them and were successful in getting all they desired.

Four other records of Canvas-backs in this vicinity in recent years may be mentioned. A drake in full adult plumage was seen by me on Fresh Pond, December 23, 1905, and remained there to January 8, seventeen days, when the pond closed up with ice. He was in company with a flock of Black Ducks, and it seems as if his stay depended solely upon the pond continuing open in some part, in which case he might have been disposed to remain throughout the winter. It is on record in Mr. Brewster's 'Birds of the Cambridge Region' that Mr. Harold Bowditch and Mr. Richard S. Eustis saw a female Canvas-back on Fresh Pond on November 18, 1903. This bird was seen by me on the 20th and by Mr. Brewster and Mr. Walter Deane on the 30th. The third record is that of a drake seen by me on Chestnut Hill Reservoir on March 9, 10, and 12, 1908. The fourth record was also on the reservoir where on March 21, 1909, Mr. R. M. Marble and Mr. Barron Brainerd saw a drake, which was not present on the following day.

LESSER SCAUP DUCK.—One young male Lesser Scaup was first seen by me on Jamaica Pond on November 12. Two Lesser Scaup drakes had been seen on the pond on September 25 by members of the Norfolk Bird Club, and on October 31 a male and a female

which remained for a time. While the young drake showed the black head and breast of a drake, he had a white face in the region around the base of the bill. He was joined by a female on November 25, and the two were seen together up to December 16, when two adult drakes and another female arrived, making a little company of five Lesser Scaups. Five days later, December 21, the young drake disappeared and was not seen again. The two adult drakes remained to December 24, after which they were not seen on Jamaica Pond. The two females staid to December 28, and were not seen after that day. The re-appearance of one drake on Leverett Pond, January 3, which remained constantly up to February 19, suggests that he is probably one of the drakes which had been on Jamaica Pond with the same companions he now has. The purple gloss of the head has been apparent in strong sunlight, making it certain that the bird is a Lesser Scaup and not an American Scaup; in size also he would be counted a Lesser. This drake is rather the shyest of the little company on Leverett Pond and refused to come for any of the bread offered and taken by his companions. He departed on February 19 or 20, attended by his companions. These came back two or three days later without him, and he was not again seen.

One or more Lesser Scaup ducks usually visit Jamaica Pond in the fall. In 1906, a female, first seen on November 2, was observed from time to time up to December 2. In 1908, a flock of eight birds was recorded on November 26. Two had been seen on November 4 by members of the Norfolk Bird Club. Some of these continued on the pond up to January 15, 1909. One spring record is that of a female seen on April 6, 1909. Dr. Harold Bowditch informs me that in 1900 and 1901 he saw on Jamaica Pond a considerable flock of Lesser Scaups. On December 15 and 16 in the former year it numbered from twenty-five to thirty birds; on December 1 of the latter year, fifty birds.

RING-NECKED DUCK.—Two female Ring-necked Ducks were first observed on Jamaica Pond on October 30. Members of the Norfolk Bird Club had seen these birds on the 26th. They remained in association with the other ducks, were frequently seen, and as often confirmed to be Ring-necks, and not Redheads, by comparison in size with the other ducks. On November 25,

a very beautifully plumaged drake had joined them. The drake and the two females remained to December 20. The following days none of the three were present. The two females did not appear again. But the drake was present once more, just for the day, on December 27, and was not seen again on this pond. On January 5, however, he re-appeared, for we can scarcely suppose that it was a different bird, and was seen on that day on Leverett Pond by Miss Langmaid. He has continued there with the exception that on January 17 he was absent for the day when others of the little company were also absent and again absent with his companions on February 20 and 21. In clear sunshine the purple tinting of the head is apparent, and the rather obscure chestnut ring about the neck has several times been seen, when the neck has been outstretched. A conspicuous feature of his plumage as he sits on the water, even at some distance, is a white band on the side of the breast in front of the wing when closed, having the appearance of a bar, but continuous with the white under the wing when the wing is spread. With closed wing as the bird sits on the water the upper portion of this white bar lies between the black of the breast and the black of the wing; the lower portion between the black of the breast and the finely barred side. The band across the bill, which is blue with a black tip, is pure white, and not bluish gray, and constitutes also a conspicuous feature of the bird. The bill at its base, moreover, in its junction with the face is clearly outlined with white. This outlining is quite discernible at some distance. Thus all the characteristic markings of the species are in strong effect. But the small white patch of the chin had not been seen upon any visit until on a day in late February he raised and drew back the head sufficiently to make it twice appear. This patch, therefore, is not a distinctive mark for identification except the bird be in the hand. The crown feathers are usually somewhat raised, producing the effect of a slight crest, and the sides of the head appear puffed out in the same manner. The Lesser Scaup's head did not have this appearance. He appears of the same size as the Lesser Scaup drake. They are often in juxtaposition, affording good opportunities for comparison of plumage as well as size. This is the first record in recent years at least, so far as I am aware, of a full-plumaged drake

in this vicinity. This Ring-neck also dives with wings close to the side.

In 1907, a single duck was seen on the pond on October 21, was joined by four others on the 26th, and by three more two days later, all female or immature birds. These, after many very satisfactory views of them, I regarded as Ring-necks. Dr. C. W. Townsend judged them to be rather of the size of Redheads and so regarded them. Some of these remained to November 12. On the 13th none were present. I viewed them at times on the shore at near range, and they seemed to be in body scarcely larger than the Coot (*Fulica americana*), which were near them. It was the same when the two species were swimming together. These ducks also showed an obscure band across the bill above the tip. The female Redhead present with us this winter shows no band, even obscure, across the bill. It seems of interest to mention the occurrence of these ducks here, whether they were Ring-necks or Redheads. The occurrence of so many was rare in either case.

Mr. William Brewster records in his 'Birds of the Cambridge Region' the presence of two female Ring-necked Ducks on Fresh Pond in the afternoon of November 30, 1903.

In connection with the account of the entire winter stay of these representatives of five species of wild ducks, it may be of interest to present the full record of the fall and early winter season of 1909 at Jamaica Pond, as this will indicate how much the pond is availed of for a time by wild waterfowl in their southward flight, and will show what companions, transient or more permanent, these wild ducks had while they remained upon Jamaica Pond. Leverett Pond and the other waters in this section of parkway will be incidentally referred to by name as receiving migrant waterfowl, and mention will also be made of other recent records upon these waters and the waters of Chestnut Hill Reservoir, likewise in Boston, and of Fresh Pond in Cambridge. I am indebted to a number of local observers for many of the records.

Podilymbus podiceps. PIED-BILLED GREBE.— One was recorded from November 4 to December 18. This grebe was first seen on October 31 by members of the Norfolk Bird Club. One or two have also visited the pond in each of the three preceding years. The visitant sometimes passes to the waters of Ward's Pond.

Larus argentatus. HERRING GULL.—Occasionally one or two or a small flock appeared at the pond in November and December. They are infrequent visitors. But on January 5, 1909, a showery day, a flock numbering a hundred was seen. They also appear on occasion at Leverett Pond and in the Fens.

Mergus americanus. MERGANSER.—Two drakes in full adult plumage were seen on Leverett Pond on February 9 by Mr. E. E. Caduc, when in company with Mr. F. W. Jones some photographs of the wild ducks were taken. Mr. Caduc states that they were fully in view upon their arrival and remained for several minutes, when they took wing away. They have been regular winter visitors to Chestnut Hill Reservoir, two miles distant, when undisturbed, where on one day of the present winter sixty-six were counted by Mr. W. C. Levey. On March 20 Mr. Barron Brainerd states he saw two males circling about Jamaica Pond. This was at the time the ice had just disappeared. The Norfolk Bird Club reports that a drake was seen flying around the pond on December 14, 1908. The species is a very infrequent visitor to either of these ponds.

Anas platyrhynchos. MALLARD.—Several individuals, notably two drakes, either arrived with or associated themselves upon their arrival with the Black Ducks in November and December and remained with them apart from the park Mallards. Later they went with the Black Ducks, upon the closing up of the pond, to Chestnut Hill Reservoir and still later were seen with them on Fresh Pond. When the latter re-appeared upon the ice of Jamaica Pond several days successively in January, these two Mallard drakes were still with them. On several occasions one or two female Mallards also were identified among this flock of Black Ducks. It is quite probable that other wild Mallards arrived in the fall and either joined the park flock or departed. Several individuals were noted in the autumn that appeared shy for a time and kept well off on the pond, and later at Leverett Pond there continued to be shy individuals in the park flock.

Anas rubripes and *Anas rubripes tristis*. BLACK DUCK.—A small number arrived in early October, and this number was increased quite steadily up to December 11, on which day I counted one hundred and seventy. The numbers then diminished gradually

to nearly the end of December, when all were gone from the pond and one hundred and seventy-five were counted on Chestnut Hill Reservoir on December 31. There had been but ten on the reservoir on December 21, while the large flock still remained on Jamaica Pond. The Black Ducks make this change quite regularly season by season when Jamaica Pond freezes up, but they always choose the pond in preference to the reservoir when they arrive in the autumn and remain on the pond as long as it is open. Their return to sit on the ice some hours of the day, January 19, 20, and 22, as two independent observers inform me that they did, indicates their liking for the pond. This preference is doubtless strengthened by their sharing in the feeding of the park Mallards when they are associated with these in the fall and spring. Mr. J. H. Kelley, who cares for the park ducks, informs me that many of the Black Ducks come in shore with the Mallards for the corn which he scatters. It should be stated also that measures have been employed the present winter to keep all water-fowl off the waters of Chestnut Hill Reservoir under the direction of the Water Commissioners, who entertain the idea that the waters are polluted by the presence of the birds and that germs of disease may be conveyed by the gulls coming up from the sewage-contaminated waters of the harbor and bathing in the reservoir. So, acting upon this theory, a plan of firing blank cartridges, when they are gathering, was conceived and put in practice as a means of dislodging and deterring them. This expedient, closely followed up, has been efficacious. For I have been again and again to the reservoir this winter to find only, perhaps, two or a half-dozen American Mergansers and as many Herring Gulls, or none at all. In previous winters there have often been present from twenty to thirty mergansers, sometimes hundreds of gulls, including many Great Black-backed Gulls, and a permanent flock of Black Ducks, throughout the day, numbering a hundred or more, usually accompanied, whether on the ice or on the water, by severals Mallards. Such a company of water-fowl has been entirely absent the present winter, and the Black Ducks have had to seek a refuge elsewhere. This refuge was often Fresh Pond. On February 20, Mr. W. C. Levey informs me, the flock numbering one hundred and seventy-five was seen by him there, accompanied by three Mallards, two

drakes and a duck. The number of the flock seen on these several bodies of water indicates beyond a doubt that it is one and the same flock remaining tenaciously throughout the winter and occupying one or another of these places at will according to conditions.

Nettion carolinense. GREEN-WINGED TEAL.—A female was seen on the pond November 12 and 13, frequently coming to the shore with the Mallards and allowing approach as near as fifty feet. This was a transient visitor only. Two days later, Mrs. Edmund Bridge, who had seen the bird with me at Jamaica Pond, saw a female on a small pond in the Arnold Arboretum about a mile southward, presumably the same teal. Mrs. Bridge says it was as unconcerned there as it had been on Jamaica Pond.

In connection with this record it may be interesting to state that in the season of 1907-8 a Green-winged Teal drake passed the entire winter in Boston and vicinity. I first saw him on December 13 in the Back Bay Fens. When the waters here became frozen, he passed for a time in January to Jamaica Pond, I am informed. Later he accompanied a flock of park Mallards to the Charles River Basin, where Muddy River enters, and lived there for a while. I saw him there on January 28 and February 10 and 14. On February 15 he had gone to Leverett Pond, and on February 26 was on Chestnut Hill Reservoir. On March 12 and 14 he was again seen in the Fens and on March 16 was on Fresh Pond. Further he was not traced. He was very handsomely plumaged, would swim about happily with the Mallards, and allow one to view him as near as twenty or thirty feet. I was informed by a patrolman in the Fens, where I first saw this teal, that he had come and joined the Mallards about the first of December. In all probability the teal seen in succession on these six different bodies of water was one and the same teal. It was my wont, when I found him in a new location, to go to the place where I had last seen him, and I found in every instance that he was absent from there. Thus it proved impossible to locate two Green-winged Teal drakes in the vicinity. One other record in a recent year should be mentioned, that of a female on Leverett Pond, December 22, 1906.

Aix sponsa. WOOD DUCK.—Mr. Barron Brainerd informs me

that on October 29 he saw in company with Dr. W. C. Mackie a female Wood Duck fly in from the southeast and settle upon the pond. When he called to another observer, who was not far away, the duck took wing and disappeared over Brookline. Occasionally in previous seasons one has made a brief call to the pond.

Clangula clangula americana. GOLDEN-EYE.—The Golden-eye is an infrequent visitor to the pond, and when a bird or two of the species appears, it is usually for the day only. On November 26 a single female was seen. Mrs. Edmund Bridge mentions seeing a drake on the pond on December 13. Mr. Brainerd states that he saw a pair of Golden-eyes on Leverett Pond on March 6, 1910.

Charitonetta albeola. BUFFLE-HEAD.—In two seasons in recent years I have a record of this species on the waters under consideration. On November 16 and 18, 1906, I saw a young drake in the Back Bay Fens, and on November 26 and December 15 an immature bird, perhaps the same, on the Charles River Basin. This basin had been the winter home of a pair during the season of 1905-6. A flock numbering eight birds, two of them drakes in adult plumage, had been present in December, and this pair continued on through January to early February.

Mr. Barron Brainerd testifies to seeing four ducks on Jamaica Pond in the early morning of October 29, which appeared to him and his companion, Dr. Mackie, to be Buffle-heads on account of their size and color, but the light and their distance out on the middle of the pond prevented a positive identification.

Erismatura jamaicensis. RUDDY DUCK.—The Ruddy Duck is a regular visitor to the pond. On October 19 six were present and in the same forenoon two others were seen on Leverett Pond. The Norfolk Bird Club reports that on October 10 the first Ruddy appeared. At the end of October there had been an increase in number. Nine were on the pond at that time and three others on Leverett Pond. Mr. Brainerd reports that he saw seventeen on Jamaica Pond on November 18. The number fluctuated from day to day up to December 17, when there were still eleven present. On the 20th there were but five, and on the 21st there was but one. On the next day none remained. All the Ruddies, therefore, left the pond in advance of its complete freezing up, but not until a strong suggestion that this was impending gave them a plain

warning. The previous season two had remained with open water to January 5. In 1907 two remaining from a larger flock were last seen on December 14. In 1906 the last one remained to December 6.

One spring record is that of a Ruddy drake seen by me on Fresh Pond on March 23, 1910.

Branta canadensis. CANADA GOOSE.—Mr. Barron Brainerd states that on the afternoon of November 14, while at the pond, he heard a few "honks" and soon saw twenty-eight Canada Geese come into view from the north and pass over. They were in one line. There have been occasions when a migrating flock has alighted on the pond.

Fulica americana. COOT.—This species is also regularly present year by year. The number has rapidly increased, however. In 1906 ten was the maximum; in 1907, twenty-two; in 1908, an off year, only three. I found on October 19, 1909, that there were twenty-nine present. The Norfolk Bird Club reports this number present on the 17th. The number went on increasing until a month later, November 22, there were thirty-nine. This maximum was held for five days, when there began to be a slight decrease, but even a month later, December 21, there were thirty-three present. The number then fell off rapidly to eleven on the 28th, and to five on the day of the closing up of the pond, December 30. These five were penned with the flock of park ducks, geese, and swans, but escaped, save one, and flew out on the ice and then round about, looking for open water, but finding none. As no more was seen of these birds, I surmise that they proceeded farther south, as sections of the flock had already done within the preceding few days. One was secured with the park fowl and is in captivity with them at Franklin Park.

One Coot wintered during the season of 1907-8 on Jamaica and Leverett Ponds. It was the remnant of a flock which at its maximum numbered twenty-two birds. This coot was seen on January 1, 14, 20, and 28, on all of which dates the pond was partially open. In February and March the bird was on Leverett Pond and remained there up to April 8, after which no further record of it was obtained. One Coot appeared on Jamaica Pond in the spring migration of 1910. It was first seen by Mr. Kelley

on April 2 and by me on April 4. It remained to April 15. The captured coot was still at Franklin Park and swimming about on the waters of the pond there with the collection of ducks and geese when this coot appeared on Jamaica Pond.

The little company wintering on Leverett Pond, which has much interested the local bird-observers, was still present unbroken on February 19. On February 20 all but the four Baldpates were absent and continued absent over the 21st. On the 22d they had returned again with the exception of the Lesser Scaup drake, which was not again seen. Throughout the winter this drake had been rather the shyest of the little company. Where these birds went when absent for a day or two, as has occurred several times, we do not know. A search was made of all the neighboring waters on the 20th, when they were missed by several successive visitors to Leverett Pond, but none of these observers, familiar with them, could find them. Yet two days later they had returned, leaving, however, the Lesser Scaup behind.

To have had an individual of any one of these species with us throughout the winter would have been a rare occurrence. Therefore the presence of the five species on Leverett Pond furnishes an extraordinary record. It would not have been possible except for the two facts that the waters are protected and that open water, at least to a limited extent, is secured to them. Back of these necessary conditions lies one other fact that the wild fowl in unusual numbers came to Jamaica Pond in the fall and early winter and found it an acceptable place for tarrying. So these ducks, having remained late and become wonted to the conditions and to association together, when it became necessary to take to another spot, sought one near at hand. They wavered somewhat in the selection, but in a few days were of one mind and chose the place plainly the most favorable for them. Here they have lived happily and well, relieved of their natural fears by the presence of the park Mallards and becoming quite like domesticated ducks.

Something will now be added concerning these ducks as winter departed and spring opened and concerning their final disappearance, this being an addendum to the paper as read before the Nuttall Club.

On the first day of March the ice had nearly gone from Leverett Pond and these ducks were swimming in the newly opened southern portion. As soon as they had open water over its entire extent they began to show more shyness and sought the middle of the pond when an observer approached the shore. On the night of March 20 Jamaica Pond became free from ice. Here already some Black Ducks had been coming for a few days while much ice remained. Thirty-six were counted on the waters on March 22. Three days later there were rather more than a hundred, and about the same number was still present three weeks later, on April 13. In the flock there appeared to be about as many *rubripes* as *r. tristis*. They were more scattered over the pond than is the case in the autumn. With them were two pairs of Mallards, the companionship suggesting that these were wild birds and not members of the park flock. On March 20 Mr. Barron Brainerd had seen two pairs of Mallards asleep on the ice with the Blacks. The number of the Black Ducks diminished day by day after April 13, until on the 19th none were present. Their departure may have been hastened, perhaps, by the use of boats on the pond, which began a few days previous and was obviously a disturbing factor.

On March 22 the little company which forms the basis of this paper was still intact on Leverett Pond except the Lesser Scaup drake, which, as before said, had already disappeared. On March 25 the Redhead duck, the Canvas-back drake, and the Ring-necked drake had passed to Jamaica Pond. There they were seen by me and by Mr. Brainerd. On the following day Mr. W. C. Levey and Mr. J. H. Kelley saw them still there. On the 27th Mr. Brainerd saw them all in the forenoon on Jamaica Pond and in the late afternoon, a little after 5 o'clock, he says, saw them all on Leverett Pond. This was the last record obtained of them. They must have left that night or on the next day, for on the 29th, when they were again looked for, they could not be found and were not again seen. The presumption is that they left together, just as they had always been in association together and in their several changes of location from the one pond to the other and in their successive brief absences during the winter either all three or none of them were seen. On the March 25 ob-

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servation it was found that one Baldpate drake had disappeared, leaving the three other Baldpates behind. One drake, it may be of interest to recall, had joined the two drakes and the duck six weeks after their arrival on Jamaica Pond in the fall. This day one Baldpate drake and the duck were seen on Leverett Pond, swimming about closely together as a pair. This drake, which appeared to be paired with the duck, was the handsomest of the three, having a more pronounced white crown, which throughout the winter had made him the most conspicuous of them. No courtship actions of the pair, however, were witnessed by myself or by Dr. C. W. Townsend, who gave them close attention for a time in the warm forenoon of this day. The third drake, though not seen on this day, was subsequently present with the pair. These three remaining Baldpates were again seen by me on March 31 on Leverett Pond. They had been going back and forth from the one pond to the other for several days. On April 1 they were seen on Jamaica Pond by Mr. Kelley and also by Mr. Brainerd, but were not again seen by them or me there or elsewhere.

The departure of these ducks from the waters where they had lived throughout the winter and into early spring at the time of the general northward migration further strengthens the necessary assumption that they were wild ducks, that they came from a state of wildness and returned to a state of wildness, having behaved during their season of association with the park ducks almost as if they were domesticated.

A HERMIT THRUSH STUDY.

BY NORMAN MC CLINTOCK.

SOME forty miles northwest of Marquette, Mich., on the south shore of Lake Superior, are situated the Huron Mountains of granitic formation. Here are also found several wild and beautiful inland lakes. The drainage of two of these, Pine Lake and Mountain Lake, forms Pine River, the entire length of which, before it empties into Lake Superior, is only about one and one half miles. Three quarters of a mile from this river's outlet a Hermit Thrush's nest containing four eggs was found by a boy, upon July 24, 1907. The nest was built upon the sloping river bank, fifteen feet from the water's edge, and with a southwestern exposure. At an equal distance on another side of the nest was a swamp overgrown with a thicket of alders, which bushes also lined the river bank. The nest was placed on the ground beneath a low huckleberry bush, the latter being overspread by the pendant fronds of a fern brake. The surrounding vegetation of the immediate vicinity consisted of little white pine seedlings, huckleberry bushes, brakes, wintergreen plants and trailing arbutus. The region was also wooded, the trees consisting almost entirely of pines — Norway, white and jack.

Three days after the discovery of the nest, it was visited again, when two of the eggs were hatched. On the day following, July 28, there was a third young bird. The fourth egg proved to be addled.

It was not until August 2 that I was able to begin the following observations, which were made from a dark green denim blind, supported by an umbrella, according to Mr. F. M. Chapman's specifications.

From this blind I also secured a series of interesting photographs, several of which were published in 'The Outlook' of April 23, 1910, together with a short account of my Hermit Thrush study.

Nest Construction.

The nest was entirely composed of the materials with which the ground, surrounding the site, was thickly strewn; namely, dead Norway and white pine needles, green moss, decayed wood and dead twigs. Although there were jack pines within a few feet of the nest, no needles of this species were used. For the inside lining of the nest, the finer white pine needles were exclusively employed. The green moss was worked into the downward sloping wall of the nest, but was not found in the rear wall. The decayed wood was worked into both the rear and front walls. The only other material gathered by the thrushes were a few dead twigs, which were promiscuously scattered over the other materials of which the nest was constructed.

I wish to offer here what seems to me a probable and satisfactory explanation why the color of the Hermit's tail is lighter than the rest of its upper parts. In my observations, I noted that the small bits of decayed pine wood, which were scattered about the ground, were of a conspicuously lighter tone than the brown of the predominating pine needles and other dead leaves. Not only this, but when the sun shone, spots of sunlight filtered through the trees and undergrowth, lighting up patches of brown upon the ground. The color of the Hermit's tail had just the effect of the small pieces of dead wood and of the sunlit spots mentioned. It was very evident that these thrushes were, at least in that locality, better protected by the lighter color of the tail than if the latter were uniform in color with the back and wings, as in the Olive-backed Thrush.

Feeding.

It was half an hour after I entered my blind on August 2, before the young were fed, which was done by both parents. During the first hour, there were but three feedings and during the succeeding one and one half hours six feedings more. Sometimes twenty minutes elapsed between feedings, at other times but a moment. The average interval during my two and one half hours watching on this first day was sixteen and three quarters

minutes. This was undoubtedly much longer than normal and was due to the timidity of the birds, by reason of my blind. The parents were frightened away a number of times when approaching with food, but on the succeeding days were less timid, especially the female.

Twice on August 2, a parent visited the nest without the intention of feeding, a general inspection apparently being the sole object. On the two occasions on August 2, I thought feeding was accomplished by regurgitation, but at no succeeding time was there any semblance of this method.

It would have been much better could I have left my blind in position at the nest during my absence. However, to guard against the molestation of the nest, I deemed it advisable to remove the blind each day.

On August 3, I watched for three hours and twenty-two minutes, beginning at 12:10 P. M. The first feeding was given in eight minutes after entering my blind. On this day forty-three feedings were administered, which is an average of four and three quarters minutes between feedings.

Out of thirteen of these feedings, the parents on four occasions divided food carried at one time between two young, while each of the remaining nine feedings were administered to but a single bird. Not once, either on this or any other day, did I see three young fed at the same time.

On August 4, I watched from 11:38 A. M. until 1:07 P. M. During this period twenty feedings were given, which is an average of once in $4\frac{1}{2}$ minutes.

Three hours and twenty-five minutes were spent by me, between 11:50 A. M. and 3:15 P. M. on August 5, in my blind. But twenty-eight feedings were administered on this date; which was one feeding in $7\frac{1}{2}$ minutes.

During the first couple of days of my observations, I could only occasionally distinguish between the sexes of the parents. I later observed, however, that the spots on the breast of the male, which I positively distinguished by his singing, were slightly more intense and more sharply defined than on the female. On August 5, out of eight feedings, when I was sure of the parents' sex, six were administered by the male.

Many times it was impossible to detect the kind of food given to the young. I noted the following facts regarding this question: On August 3, a grasshopper was fed to the young on two occasions, and in both instances, the insect was divided between two nestlings. Twice a brown moth was fed to a single bird. That at least one of these moths was fed intact was demonstrated when the parent, in the act of transferring it to the young's mouth, dropped the moth within the nest, about which it fluttered until recaptured. On two occasions green caterpillars were given; at other times bunches of indistinguishable insects. This animal diet was occasionally varied by red wintergreen berries, which I saw given three times on August 3.

All food was, apparently, gathered within a very short radius of the nest, the parents, I should say, seldom being more than fifty feet distant.

Sanitation.

During my watch of three hours and twenty-two minutes on August 3, the young made their excrement ten times, which is approximately one fifth of the number of individual feedings. On August 4, four excrements were made in one and one half hours, which was also about one fifth of the feedings. On August 5, however, this ratio increased to one third, when there were ten excrements to about thirty feedings, during three hours and twenty-five minutes.

No nestling ever made its excrement, except immediately after being fed. After a parent had delivered food, it would remain for a few seconds by the nest to see whether a little bird showed a desire to make its excrement. If it indicated this desire, the parent with head lowered stood behind the nestling and received the excrement in its bill, before the former fell. To facilitate the handling of the excrement by the parents, the young generally bowed their bodies in the shape of a U, which brought both the head and the vent on a level with the rim of the nest. Twice, however, instead of assuming this position, I saw a nestling apparently stand on its head when voiding its excrement. Three times, during my days of watching, a parent was frightened away before

it could secure the excrement. Twice this lodged on the nest rim and once it dropped back into the nest. On the three occasions mentioned, each excrement was immediately removed upon the parent's succeeding visit.

Up to about noon on August 3, the excrements were, with one exception on August 2, swallowed by the parents; after this date, however, they were invariably carried away between the mandibles.

While the young lived within the nest, I observed that the excrement was enclosed within a gelatinous sac. I subsequently learned, upon the day after the young left the nest when one of the little birds voided its excrement in my presence, that the excrement lacked the gelatinous sac.

Call Notes.

A very interesting and instructive part of my experience with this thrush family was what I heard and learned relative to the birds' call notes, of which I distinguished five distinct kinds, in addition to the song of the male.

The first of these was the well known *quirk* or *quoit*, which is familiar to all acquainted with this species. This note was seemingly employed as a mild form of protest and was uttered when the birds were slightly suspicious or when they mildly protested against the presence of an intruder. A second note was a high pitched, thin and wiry call that was a counterpart of the Cedar-bird note. It was also I think, judging from memory, even more like a similar note that is much used by the Robin. This latter comparison is of special interest owing to the ancestral relationship existing between thrushes and robins.

I was one day fortunate in hearing a Cedar-bird and one of the parent Hermits give these similar notes at the same time and within a few feet of each other. The Hermits' note, although of the same quality as that of the Cedar-bird was pitched several tones higher than that of the latter. The Hermits used this thin wiry note as a warning to the young of approaching danger. To the little birds this call meant "freeze." On the last day of my observations, I had two good opportunities of witnessing the use of the call note in question. On one occasion both parents were

out of sight and the young were uneasily testing their growing strength by moving about the nest, spreading their wings, stretching their legs and opening wide their mouths. Suddenly, from the adjacent swamp, came this wiry note of warning. Instantly, the three young closed their conspicuous yellow lined mouths, dropped to the bottom of the nest and remained motionless. Later that day I again saw the same thing repeated.

A third note, which this pair of Hermits used signified extreme distress. This note sounded to me much like the note of a hoarse Canary. I can best describe it by the word *boyb*, spoken slowly and with a rising inflection. The note also reminded me of the mew of a kitten. *Boyb* was uttered by the thrushes with the mandibles well open, whereas their Cedar-bird call was made with the mandibles almost closed.

Besides the three notes described, there was a much used conversational note that evidently contained no implication of suspicion or trouble and was in strong contrast with the several notes already described. It was an exceedingly soft and sweet little note that could be heard but a few feet, and which I can best describe by *wee*. *Wee* was used by the parents to each other and to the young. It seemed, however, to be mostly employed to herald to the young the parents' approach with food. At a distance of six or eight feet from the nest a single *wee* from a parent would announce to the young the former's proximity. As the parent hopped closer, the *wees* were rapidly repeated, *wee-wee-wee-wee*, and the nearer the parent came to the nest, the softer the *wees* were uttered, until they were faint whispers. To these *wees*, the young responded, during their first days, by erecting their heads and opening wide their mouths; but later, when they became more mature, they would rise to their feet upon hearing the first *wee* and energetically beg for food. *Wees*, however, were not always uttered when the parents approached the nest. Sometimes, when everything seemed to be running smoothly, the parents came and went in complete silence.

The fifth, and only remaining note, was one I heard but twice and both times it came from the male. It was an indescribable explosive twitter of ecstasy made with fluttering wings. I first heard it on August 3, immediately after the male had been singing

for four minutes. On another day, it was uttered in the presence of the female, who was close by and towards whom it was directed.

Singing.

Each day I was at the nest, the male Hermit sang. A particular limb in a dead pine, fifteen feet distant, was the favorite perch for his exquisite performances. The first time I heard him from this limb, I thought it was another bird far back in the woods. With the assistance, however, of a pair of 8-power prism binoculars, which brought the Hermit within an apparent distance of about two feet, I could plainly see the feathers of his throat vibrate coincidentally with the singing. There was little if any movement of the mandibles and the notes were muffled or hummed, instead of being poured forth from well opened mandibles in a volume that carries far. I believe this explains the remarkable and well known power as a ventriloquist of the male Hermit, by whom I was deceived, even when looking directly at the singer in a good light and fifteen feet distant.

The male Hermit sang daily until August 7, when my observations ceased, and it sang during all hours of my presence. These song periods varied from a few seconds to six minutes duration, and this longest period was at noon on August 4. Almost all the singing was, however, so low and soft that it could be heard only at close range.

Development of Young.

The little Hermits were 6 or 7 days old on August 2, when I commenced my observations. They then kept their eyes closed almost constantly and seldom moved, except while being fed or during the few seconds immediately following feeding, when they would move their bodies, stretch their wings and then settle quietly down. At this age the young seemed occasionally to tire of their customary sitting posture and once on August 2 I saw one young bird rest on its side with one foot in the air, as high as the heads of the other little birds. On this same day, I also noticed one young picking at his half grown pin feathers. Towards evening

on August 2 it commenced to rain, but the rain did not last long and no brooding of the young was done. Several times during each bright day, the sun shone directly on the nest. During these periods, some of which lasted twenty minutes or more, the young seemed to suffer. Twice on August 2 the female brooded, once for eight minutes, but the latter was the last brooding I observed. Preceding each of the broodings mentioned, the female straddled the nest and seemed to burrow between the young. The explanation of this action I was unable to definitely discover. Possibly, however, the bird may have been loosening the packed down pine needles lining the nest bottom, in order to secure better air circulation. Throughout the eight minutes of brooding by the female, the male sat on his favorite perch in the dead pine, with food for the young in his bill.

The young were 8 or 9 days old on August 4 and showed marked development over the day before. When I approached the nest the little fellows hissed at me. During the parents' absence, the nestlings also kept their eyes open much of the time, whereas, on the day before, they kept them closed. They also exhibited considerable activity on the 4th, picking their feathers and stretching their wings. On this day, I also noticed that the young for the first time rested their heads on the rim of the nest.

On the day following, August 5, the dark tips of the feathers forming the spots on the breast and the little bright cinnamon tail feathers showed very plainly. I also observed, for the first time, one of the young erecting his crown feathers. Two of the young also stood on their legs in the nest and stretched their wings, one flapping his wings.

Heretofore, the young, while in repose or sleeping, during their parents' absence, kept their heads straight in front, but on August 5 I saw one young bird rest its head on or behind its wing while sleeping.

August 6 was hot and sultry with a south wind. On this day, the young clamored for food by squeaking, when the parents approached within six or eight feet of the nest, and, as they came nearer, the little fellows rose to their feet and with necks craned forward, received their rations. The attitude of the parents toward the young likewise changed on this day, for, instead of

hopping along the ground for the last six or eight feet, when approaching the nest, as was invariably done during the first days, they now flew direct to the nest.

I was much interested in watching the attitude of the parent Hermits towards other animal life during my period of watching. A neighboring chipmunk was chased daily and upon one occasion was put to rout three times within ten minutes. No attention by the Hermits was paid to the proximity of Chickadees or a Purple Finch. Neither at another time did one of the parents, which I was watching at the nest, exhibit any apparent concern, when a Northern Raven flew low over the nesting site.

The greatest exhibition of anxiety made by the Hermits toward any wild creature, during my entire watching, was on August 6 when there was much excitement, which lasted for a half hour, in the thicket just back of my blind. During this time, all feeding by the parents was suspended and the thrushes constantly uttered their several alarm notes, changing from one to the other at intervals. In these protestations the thrushes were joined by a sympathetic flock of Chickadees. An investigation by me of the source of the trouble disclosed, to my surprise, a Flicker leisurely feeding on the ground.

Towards evening of August 6 it was apparent to me that the time for the young to leave the nest was close at hand. I, accordingly, decided to secure, before it was too late, some portraits of the young that would show their development. This process brought to a close the life in the nest, as the young birds would not remain in their nest after being temporarily removed.

The next morning when I returned I found the site deserted and even though I took up my watch within the blind, yet no sight nor sound of any Hermit did I have. I later located one young thrush in the following manner, which I believe would prove an excellent method for others to adopt when desirous of finding hidden nests or young birds: I hunted around in the adjacent swamp until I heard the familiar Canary-like *boyb* note of a parent Hermit. This note was kept up until I retreated from the spot, when the male changed from the *boyb* note to his Cedar-bird like call. This indicated to me that I was very near the young. Accordingly, procuring my blind, I hastened to the spot where I

heard the distress calls, which was about 100 feet from the nest, and there went into hiding. At the time there were three adult hermits together. After ten minutes silence, I began to hear occasional faint little "peeps," which it was impossible to locate precisely. Presently, however, one of the little thrushes appeared from hiding and began to hop along the ground and fallen logs and to climb through the underbrush. Now and then the little fellow would fly two or three feet, from twig to twig, all the while pumping up and down his little cinnamon tail, so characteristic of all adult Hermits, and giving voice to an occasional "peep" for food. But when it received food from a parent, no sound was uttered by the young bird, neither did the parents use the *wee* note. Though I made a search of the vicinity the following morning, August 8, I could find no trace of the Hermit family.

WILD LIFE OF AN ALKALINE LAKE.

BY FLORENCE MERRIAM BAILEY.

THE few lakes of the arid region are peculiarly interesting as they attract hordes of migrating water birds that pass over the wide stretches of dry land, while affording nesting sites for many resident water birds, and feeding grounds for both birds and beasts of prey. A series of alkaline lakes in northern New Mexico near the continental divide was once visited by us during a fall migration and although we were unable to take a census of the water-fowl gathered there we had a most interesting experience.

The largest and most thickly populated of the lakes had been named from a sulphur spring with frank, western realism — Stinking Spring Lakes. From long and bitter experience with alkali we took warning from the name and stopped before reaching them to fill our canteens and water keg at a spring of less noisome reputation, where we found a like-minded Mexican boy with three burros, filling his kegs for a sheep camp.

The first lake on the road, reached just at sundown, suggested

a turquoise with a raised setting, being a round body of beautiful blue water lying between the cliffs of a cañon. Along its margin ducks were feeding but there was no protecting cover for a collector, and although one of the party crawled toward the birds with a disguising bunch of weeds on his hat, before he was within range they splashed off, rising heavily, and after flying around in close flocks like swarms of insects on a summer day disappeared through the yellow haze of the cañon gateway like a wedge of light. As we followed in their direction the cañon widened out to a great sagebrush basin with a rim of yellow pines. In the bottom of the basin lay the main lake, an irregular body of water about four miles long and in places a mile wide. Its shore as far as we could see was bare of cover and had a wide marginal mud flat bad for working purposes, so when we came to a small tule-bordered lake separated from it by a low ridge with passes, we promptly camped in an adjoining side gulch. Here to our surprise, we found sheltering cottonwoods, watered by the seep from the mesa, high untouched grama grass for the horses, and actually fresh rain water pools, after which the spring water which we had thought ourselves fortunate to get on the way seemed impossibly alkaline.

The tule-bordered lake was connected by a narrow channel with a bare lake at the end of which were several acres of low half submerged brown weeds that, while offering no cover to enemies afforded protecting shelter and a rich feeding ground to visiting ducks. Its advantages over the tule lake, from the birds' point of view, were demonstrated the morning after our arrival. As we came in sight of the tule lake Mr. Bailey stuck a high weed into a sagebrush and, gun in hand, crouched behind the screen while I sent stones splashing among the tules. Do my best, nothing would rise. As I walked on toward the bare lake, however, the instant my figure was sighted above the sagebrush there was a thrilling roar, and a great multitude of ducks rose from the concealing weedy border in which they had been feeding. Breaking up into flocks they circled and then rose and flew in black lines through the low passes of the sagebrush ridge to the main lake.

This experience determined our method of work. We wasted no more time at the tule lake unless in passing we chanced on some

stray bird that we wanted, when it was shot from the tule screen, though the water was cold and so deep that it was necessary to swim for one's game. Our work lay at the feeding ground and in the passes. The passes were a simple matter, for while Mr. Bailey lay in ambush in the sagebrush I went down to whichever lake promised best and by a series of rifle shots kept the black hordes moving across the passes. The only difficulties here were that a corps of men was needed to guard the crossings and that we were without duck shot — empty cartridges of former hunters strewing the ground pointed our discomfiture, for our ammunition was too light to penetrate the thickly padded bodies at their flying height. Work at the feeding ground on the other hand was difficult because of the lack of cover. We could not hope for a census of the water-fowl of the lake, but would do our best to get an idea of the most abundant species.

The excavated blinds that we discovered along the lake had been turned into wells by the recent rains and a brush blind was at best a suspiciously conspicuous object. It was our only hope, however, so gathering branches of sagebrush and greasewood, *Atriplex*, we stuck them into the ground, adding a row of white-seeded weeds that grew along the water's edge to give the touch of nature of which we were so sorely in need. While we were at work on the house no water birds came near the lake, but Bluebirds and a flock of Pipits, now down from the mountain tops making their southward journey, flew around among the surrounding brush and weeds.

When all was ready we entered the blind and after waiting quietly for some time with heads bent low under the screening aromatic branches, through the chinks we saw the ducks begin coming back to the lake. Then we would hear the whistling of a flock rushing through the air overhead, and after time enough for the birds to circle around the lake would hear a splash from those that plumped down and a seething sound from those that slipped in more quietly. If a heavy swish of wings made us give a guarded sidelong look upward we might see passing swiftly over a flock of from four to fifty ducks whose long outstretched necks made their wings seem short and set back on their heavy bodies. Teal and Gadwall were most abundant but Baldpates were also numerous,

and one company of long-necked Pintails, and two of Shovellers were noted. If a flock suspected our blind it would circle around and around overhead to inspect us. But as we made no sign, content for the time to watch through our field glasses, the lake gradually filled, becoming a busy place. Big Mallards or quiet and gently talkative flocks of little Teal would swim into the flooded weedy bottom to feed on its rich store of seeds, while other ducks splashed down in the middle of the lake to swim around in the open and feed on seeds of pigweed and smartweed under the surface.

In feeding the ducks would tip over on their bills leaving only their tails visible above the water. Three tails that we saw sticking up in a row above the water suggested a generalization on the directive value of the strikingly marked under tail coverts of ducks, for they might well serve as flags for the members of the fleet, and point to good feeding grounds. In the adult male Mallard black tail coverts and white tail quills were made more spectacular by the bright red feet that also stood in air.

To vary the monotony of swimming and standing on their bills, the birds with appetites appeased would preen their feathers or rise and stretch their necks and flap their wings. Two female Gadwalls out in the weeds with nothing better to do came to blows, twisting each other around by the bill in genuine pugilistic fashion. Once a big flock of Teal came rushing noisily out of the weeds followed shortly by a Marsh Hawk. Crows cawing over the lake were enough to raise a disturbance. But though the vast throngs were easily unsettled, if nothing came of it they circled around and settled back again. Sometimes they discriminated nicely, for when a Golden Eagle beat slowly down the lakes, though a few ducks went splashing away, most of them paid little or no attention to him and he went on quietly, lighting unobtrusively on a stub to be attacked by an abusive, indiscriminating Magpie.

Our blind was a success in enabling us to get a good general idea of the life on the lakes but too conspicuous for the birds to come within range in broad daylight—it was evident that we must enter it before sunrise and shoot at dawn. So although loath to disturb the happy water-fowl gathered on their feeding ground

we came out of our brush house and started home. The wind was blowing hard and on the tule lake the coots were huddled in black masses or snugly riding the waves with a great show of bobbing. During the day a variety of birds were seen in the surrounding country which included open plains, juniper orchards and yellow pine woods, sandstone ledges, bottom lands and marshes that attracted in turn Marsh Hawks, Killdeer, Meadowlarks, Rock Wrens, Woodpeckers, Jays — crested and uncrested — Solitaires, Kinglets, Western Chipping Sparrows, Chewinks, Goldfinches, Mourning Doves, and Horned Larks.

That night with our early morning hunt on our minds we woke at intervals mistaking the moonlight for dawn, and by 4.40 with blankets wrapped around us and guns in hand were starting for our blind, an almost imperceptible line of light in the east telling us that we were just on time. As we stumbled over the stony trail along the cliff on our way to the lake our horse bell jangled drowsily, and an owl hooted; while across the big lake a sheep bell tinkled, and from the moonlit hills came the yapping of coyotes. As we rounded the corner of the tule lakes the Coots cackled, making us turn off through the sagebrush to stop their telling tales. By a long detour, picking our way through sagebrush interspersed with cactus, our blanketed figures casting accompanying shadows in the moonlight, we finally came to the shore. The moon was partly obscured by clouds and we crept silently toward our blind, but nevertheless the nearer ducks saw us and with a disheartening roar flock after flock arose.

Once inside we straightened up the bushes, drew our blankets close around us, for the water gave the air a penetrating chill, and settled ourselves for an hour of waiting. As we got colder and more cramped a band of light grew in the east till at last it was reflected in the lake, the stars faded out of the sky, and the dark vault began to lighten. Meanwhile the ducks gradually returned and those that lit down the lake under cover of the dim light swam up so close that by peering through the chinks in our brush screen we could distinguish the species, making it unnecessary to shoot. An old Mallard feeding in the weeds with the Green-winged Teal acted as a good decoy, her barnyard *quack* calling her friends; but though the thin slazy note of the male answered her, he would not join her.

When the sky had lightened to blue a faint white mist rose over the cold water. On the previous morning the ducks had been seen lined up along the shore sunning themselves in the first light, but though we hoped they might come again, our brush house prevented. When it was light enough to see the sights of the gun it was time to shoot — alas for the necessity! At the first report the whole lake seemed to rise, and after the last shot not a duck was left, the vast multitudes having crossed over the passes to the main lake. If we would get any more we must follow them. Collecting his few specimens Mr. Bailey climbed a pass while I went down to the shore of the large lake with the rifle to start up the birds again. From a stretch of weedy shore where there was not a duck in sight, at the shot myriads arose. They formed in compact flocks and started off, most of them in their alarm following down the expanse of the larger lake, a few coming back over the pass. Once at a startling rush of wings I looked up and saw a flock descending with a speed that almost took my breath away. A few moments later there was a sudden whistling overhead and — a band of white forms vanished as they came. Were they Whistlers? We had added several species and a few desirable specimens to our list by our early rising, but best of all we had shared the beauty and life of the lake at dawn, and now turned homeward with a sense of rare enrichment.

After our experience with the vast throngs of excitable migrating water-fowl, breaking away with a roar if a crow cawed, rising in thundering multitudes if a gun went off along shore, it was a grateful relief to come back to the tule-bordered lake where the phlegmatic Coots and Ruddy Ducks were at home on their breeding grounds, and the tules were full of happy songsters. In the early morning sunshine the chattering, rattling songs of merry Marsh Wrens bubbled over all down the tule line as we passed, a little brown form appearing for a moment in explanation of a shaking tule, a white spot at the base of a stalk proving the breast of a watchful wren, or a brown flash from the weeds under our feet telling where a hungry mite was breakfasting — while other brown merrymakers went on gaily scraping their fiddle strings. Glimpses of brown forms a size larger clambering around among the tule stems went with the thin chip of the Lincoln's Sparrow

or the rich, honest call note of the Song Sparrow. In a fortunate moment we got a flash of color from a sprightly Yellow-throat. More frequently from the tules we flushed the quaint Carolina Rails that slanted up with droll, heavy-bodied, short-winged flight, to speedily drop down losing themselves among the myriad stems of their safe cover. When surprised in the yellow-green weeds outside the tules they buzzed back to them before our eyes. When a gun went off near one it would give a shrill scream, and during the mornings their strident laugh was often mingled with the talk of Coots and the quacking of ducks.

As we walked along behind the tule hedge a confusion of most remarkable sounds came from the tules where invisible Coots were swimming about — coughing sounds, frog-like plunks, and a rough sawing or filing *kuk-kawk'-kuk, kuk-kawk'-kuk*, as if the saw were dull and stuck. Often there was just a grating *kuk-kuk-kuk-kuk-kuk-kuk*. But all the mixed medley had the sound of good fellowship, and, too, an open fearless disregard of who might be passing the other side of the tule screen — for who wanted Coots? Glimpses of open water showed the whole surface of the lake dotted with moving forms, and in the cool crisp morning air while the water at the foot of each tule was sparkling, every duck on the lake made a glistening point of light. The oval slaty Coots with black necks and white bills before them sat the water like toy ducks, diving and swimming about making intersecting wedge-shaped wakes; while the chunked little Ruddy Ducks, the males with handsome ruddy bodies, sat with spread fantails sticking straight up, often with their stocky heads over their shoulders so the clear white cheek patches showed across the lake.

Downy young Ruddies were seen swimming around among the tules with their parents although it was September, and half grown birds were among the groups of Coots. Redheads had also probably bred in the tule lake for they were often seen with the Coots and Ruddies feeding out in the deep water where the pond weed, *Potamogeton*, grew under the surface. As we walked around the lake all the migrating ducks flew before us, but the Redheads would gather with the Coots and Ruddies, the dark horde merely shifting as we did from one end of the lake to the other. If hard pressed the screaming Coots would go splashing across the water

kicking and slapping it white with their feet, but the Redheads, sometimes even when shot at, would merely tip over on their bills and disappear.

In the midst of this dark horde of Coots, Ruddies, and Redheads — phlegmatic, fat, slow-moving — there suddenly appeared three spirit-like Phalaropes with white breast and slender shining white throat; delicate, exquisite, vivacious creatures, facing quickly from one side to the other, bending their beautiful necks to reach some floating morsel — swimming, darting over the water — their heads moving like doves as they went. They were seen swimming about the lake for two days but then followed a day of cold rain and they disappeared, doubtless continuing their southward journey. A few traveling Grebes also made short stops at the lake on their way south.

The same storm that drove the phalaropes south and which whitened the Colorado mountains north of us brought big flocks of blackbirds, Brewer's and Red-wings, to the lakes. We found them going to roost one night. The sun had already dropped out of sight and the darkened hills behind the lake were edged with yellow under a delicately flushed sky, the picture being reflected in the lake below; while long, insect-like strings of ducks were passing to their nightly feeding grounds and dark forms whistling by overhead. As we rounded the tule lake on our way to camp several large black flocks swung around close in front of us, dropping down among the tules and settling themselves noisily for the night. Migrants of all kinds were now on the wing. Before the cold storm a flock of about a hundred of the cliff-dwelling White-throated Swifts had been seen flying south high over the lakes.

The myriads of birds that gathered at these lakes naturally attracted hawks and owls and predatory mammals. In walking along shore we followed tracks of foxes and lynx, and fresh deep footprints of coyotes around the tules. Holes dug by skunks and badgers for beetles, gophers, and kangaroo rats were also found; the holes and mounds of the small mammals on the shore and on the sagebrush ridges. Trapping brought good results here, two coyotes, two badgers, and four skunks being taken, besides gophers, wood and kangaroo rats, and smaller game.

When trapping for the mammals we scared up the birds of the

brush. Western Savanna Sparrows flew shyly before us from sagebrush to sagebrush, Sage Thrashers disappeared with long low flights over the bushes, and at one time a Sage Sparrow led us a chase. Along the weedy lake border a Shrike and a flock of Longspurs were seen, and on the shore of the main lake one evening a buffy immature Mountain Plover was taken near where a flock of sandpipers were feeding. Across the width of the lake Mr. Bailey detected the honking of Canada Geese, and afterwards was fortunate enough to see five of the splendid great birds feeding at the foot of the lake. A beautiful Ring-billed Gull was also seen there. Though less interesting than our small lakes, this great lake, where these noble birds felt secure, had a charm of its own with its wide shore line, its broad expanse — for in arid New Mexico it seemed a veritable Ontario — and its ever-shifting, broken lines of water-fowl. Its shore in the late afternoon when the hills to the south were dark purple was flooded with slanting yellow light, and as the sandpipers were peeping and making short skimming flights along the beach, the marginal weedy border glowed a vivid yellow-green and the sagebrush hills behind were lit up till we looked upon a glowing golden shore. It was one of the moments that one could imagine feathered wanderers from home might remember, one of the moments that earlier in the year move enraptured birds to outbursts of ecstatic song.

But some birds' flights of fancy, it would seem, are not controlled by the almanac, for on one of our most autumnal mornings before my bewildered vision a Raven, a most matter-of-fact bird one would suppose, rose circling into the air higher and higher till its big black form began to grow small; as it rose, uttering a low rhythmic croaking, most vernal in its enraptured suggestion.

The lakes with their strongly alkaline water were of little interest to some of the birds. A passing kingfisher whom we discovered one morning on a dead tree above the tule lake looked sadly out of place and, we fancied, rattled disconcertedly. In any case, before night the poor disillusioned wanderer, as if reduced to extremity, was perched on a tree over our muddy camp rain pools! The next morning he was nowhere to be seen.

Small and muddy as our pools were they not only afforded water for ourselves and the thirsty horses, but for flocks of passing land

birds not addicted to mineral water. Rich dark Bluebirds, the Chestnut-backed, in their fresh fall dress drank from the pools and perched in the pine trees, a large flock of Robins came flying into our sunlit cottonwoods one morning, and for two days a flock of cheery Siskins drank and bathed in the pools and sang in the sunny tree tops above them. House Finch notes were heard and Audubon Warblers were seen dashing about as distractedly as ever, Chickadees and Pygmy Nuthatches were in the cottonwoods, and Juncos hunting over the ground, while Pileolated Warblers delighted our eyes by flashes of gold among the bushes. Magpies were often seen of a morning sitting in the sun talking and half singing a contented warble.

All these birds belonged to the day shift, but at sunset the night shift of owls began work. On a tree overlooking the tule-bordered lake we found a Great-horned Owl just waking up for his day's work when night was coming on, the sky behind the black hills having deepened from yellow to orange, the water in the lake having the cold steely light of night, only a touch of sunset warmth being left in small rosy cloudlets mirrored on the surface. One of the large nocturnal hunters visited our camp. His scream was heard from the cliff above us when, having hunted in the passes for the sunset shift of ducks, we were eating a belated supper. As we raised our eyes he came flying over on great widespread wings, lighting almost above our heads in a big cottonwood whose trunk stood out black against the rich yellow sunset light; and there he sat like a black statue, his dark body and high ears against the yellow sky, screaming in falsetto while we gazed at him. Discovering us, he retreated a little, but attracted it may be by our blazing camp fire lingered near. Indeed, camp had become quiet for the night before his cry, the falsetto scream so often attributed by terrified campers to the mountain lion, growing fainter and fainter died out in the distance. At another camp at dusk we caught sight of one of the Great-horned Owls perched on the mast-like top of a dead pine. As he hooted, he tipped up his tail and dropped his wings, making a most animated figure. Still another of the owls was discovered one night facing the rising full moon. Did he prize it for his work, we wondered, as did other mammalogists?

SOME EARLY RECORDS OF THE PASSENGER PIGEON.

BY ALBERT HAZEN WRIGHT.

THE publication of this paper is suggested by the present general interest in the status of the Passenger Pigeon awakened partly by the appearance of Mr. W. B. Merston's recent volume¹ and partly by the numerous rewards now offered for the discovery of living representatives of the species. The records were gathered as a "by-product" incidental to an inquiry into the primitive fauna of Central New York. From the local nature of this inquiry and the writer's lack of familiarity with purely historical literature and methods this compilation is necessarily incomplete. It is hoped that wider and fuller inquiries may be made by others. The writer is greatly indebted to the officials of the Cornell University Library for aid in utilizing the rare collections of Andrew D. White, Jared S. Sparks and Goldwin Smith. And lastly my especial acknowledgments are due Prof. Burt G. Wilder for kindly advice and criticisms.

Naturalists are prone to complain because the voluminous records of the Jesuits in New France are so crowded with their hopes, their struggles and the detailed descriptions of individual conversions, while only occasionally does an observant father remark upon the natural objects at his very hand. Still, taken altogether they furnish considerable information.

In their very first Relations, 1610-1613 (Acadia), they mention the great abundance of pigeons as the present note will indicate:²

"The birds are fully as abundant as the fishes. During certain months of the year the pigeons sally forth from the woods into the open country in such great numbers that they overload the branches of the trees. When they have settled upon the trees at night they are easily captured and the savages heap their tables with royal abundance."

In Huron folklore pigeons entered, as Le Jeune, 1636, shows:³

¹ The Passenger Pigeon. New York, 1907.

² Jesuit Relations and Allied Documents. By R. G. Thwaites and others, 1896. Vol. I, p. 253.

³ *Ibid.*, Vol. X, pp. 143, 287.

"At the feast of the Dead, which takes place about every twelve years, the souls quit the cemeteries, and in the opinion of some are changed into Turtle doves (*possibly our mourning doves*), which they pursue later in the woods, with bow and arrow, to broil and eat." According to Lescarbot, 1612 (Acadia), a dying Indian chief named Martin,¹ "when the Patriarch and a man named de Montfort had caught him, and made him eat some wild pigeon, which he liked very much, he asked them as they were speaking to him about Heaven, if there would be any wild pigeon there." In other instances, pigeons served as gifts to sick, as² "Monsieur de Repentigny, his Godfather, visited him often in his sickness, and sent him sometimes a few eggs, sometimes some Pigeons," Or, as frequently, the fathers themselves received them from the officials, as,³ "There were sent us by Monsieur the Governor, . . . 8 young pigeons;" And again, in their Journal for 1646 they record that⁴ "On the 3rd or fourth of January, Monsieur the Governor sent 6 . . . pigeons."

The early fathers noticed their seasonal appearance. Le Jeune, 1637, likened the Savages to the pigeons.⁵ "Our Savages are always savage, they resemble the migratory birds of their own country. In one season turtle doves are sometimes found in such abundance that the end of their army cannot be seen when they are flying in a body; at other times in the same season they appear only in small flocks." One father (Relations of 1656-57) in particular considered this migration one of the three remarkable facts of natural history in America.⁶ "The second [fact] is, that, in the Spring, so great numbers of Pigeons collect around these salt-springs, that sometimes as many as seven hundred are caught in the course of one morning." The same observation held for Montezuma (Cayuga Lake), 1671-72⁷: "Four leagues from here (*Cayuga mission*) I saw by the side of a river, within a very limited space, eight or ten extremely fine salt-springs. Many snares are

¹ Jesuit Relations, Vol. II, 155.

² *Ibid.*, Vol. XII, p. 65. Le Jeune, 1636 (Quebec).

³ *Ibid.*, Vol. XXX, p. 153. (1647.)

⁴ *Ibid.*, Vol. XXVIII, p. 145.

⁵ *Ibid.*, Vol. XI, p. 81.

⁶ *Ibid.*, Vol. XLIII, p. 153. (Onondaga Lake.)

⁷ *Ibid.*, Vol. LVI, p. 49.

set there for catching pigeons, from seven to eight hundred being often taken at once."

Of the abundance of pigeons Vivier among the Illinois writes as follows:¹ "During a portion of the autumn, through the winter, and during a portion of the spring, the country is overrun with swans, . . . wild pigeons, and teal." Gravier on his voyage through the Mississippi valley in 1700 says:² "We saw so great a number of wood-pigeons that the sky was quite hidden by them." Or, early in 1616 Biard in Acadia says,³ "there are a great many wild pigeons, which come to eat raspberries in the month of July, . . ." And, lastly, the Relations of 1662-63 give in some detail the pigeons of the St. Lawrence county.⁴ "Among the birds of every variety to be found here, it is to be noted that Pigeons abound in such numbers that this year one man killed a hundred and thirty-two at a single shot. They passed continually in flocks so dense, and so near the ground, that sometimes, they were struck down with oars. This season they attacked the grain fields, where they made great havoc, after stripping the woods and fields of strawberries and raspberries, which grow here everywhere underfoot. But when these Pigeons were taken in requital, they were made to pay the cost very heavily; for the Farmers, besides having plenty of them for home use, and giving them to their servants, and even to their dogs and pigs, salted caskfuls of them for the winter."

Besides the foregoing citations there are among the Jesuit Relations some three or four stray notes of hunting pigeons, the most important being in Marquette's Journal (Illinois) where he records⁵ that "we killed 30 pigeons, which I found better than those down the great river; but they are smaller, both old and young."

In New England, only shortly after the Jesuits began to record the wild pigeon, do we find the first account of this species. A Mr. Higgeson in 1629 writes of them as follows:⁶ "In the winter

¹ Jesuit Relations, Vol. LXIX, p. 145.

² *Ibid.*, Vol. LXV, pp. 109, 111.

³ *Ibid.*, Vol. III, pp. 81, 83.

⁴ *Ibid.*, Vol. XLVIII, p. 177.

⁵ *Ibid.*, Vol. LIX, p. 181.

⁶ Higgeson, Mr. New England Plantations. Written in 1629. Mass. Hist. Soc. Colls., Vol. I, p. 121.

time I have seene flockes of pidgeons, and have eaten of them: They doe fly from tree to tree as other birds doe, which our pidgeons will not doe in England: They are of all colours as ours are, but their wings and tayles are far longer, and therefore it is likely they fly swifter to escape the terrible hawkes in this country."

Not long after John Josselyn gave us a better account:¹ "The *Pidgeon*, of which there are millions of millions, I have seen a flight of *Pidgeons* in the spring and at *Michaelmas* when they return back to the Southward for four or five miles, that to my thinking had neither beginning nor ending, length or breadth, and so thick that I could see no Sun, they join Nest to Nest, and Tree to Tree by their Nests many miles together in Pine-Trees. But of late they are much diminished, the *English* taking them with Nets. I have bought at *Boston* a dozen of *Pidgeons* ready pull'd and garbidg'd for three pence."

In 1649 in "A Perfect Description of Virginia, etc. London," (p. 17) "Pidgeons" occurs in the list of birds. Of the same region, "A True Relation of Virginia and Maryland, etc. By Nathaniel Shrigley, London, 1669" (p. 4) says that "Fowle naturally to the Land are Eagles....Turkies....Pidgions....and many sorts more." Just preceding LaHontan, Thomas Budd in 1685 in his "Good Order Established in Pennsylvania and New Jersey in America" (New York ed., 1760, p. 36) remarks that "The Woods are furnished with a store of Wild Fowl as *Turkeys*,.... *Pidgeons*, etc."

The celebrated LaHontan, in a letter dated at Boucherville, May 28, 1687, writes of the pigeons as follows:² "In a word, we eat nothing but Water-fowl for fifteen Days; after which we resolv'd to declare War against the Turtle-Doves, which are so numerous in *Canada*, that the Bishop has been forced to ex-communicate 'em oftner than onte, upon the account of the Damage they do to the Product of the Earth. With that view, we imbarqued and made towards a Meadow, in the Neighborhood of which, the Trees were cover'd with that sort of Fowl more than with Leaves: For just then 'twas the season in which they retire from the North Countries, and repair to the Southern Climates;

¹ Josselyn, John. *An Account of Two Voyages to New England Made during the Years 1633, 1663*. Boston, 1865, p. 79.

² LaHontan, *New Voyages to North America*, Vol. I, pp. 61, 62. London, 1703.

and one would have thought that all the Turtle-Doves upon Earth had chose to pass thro' this place. For the eighteen or twenty days that we stay'd there, I firmly believe that a thousand Men might have fed upon 'em heartily, without putting themselves to any trouble." In two other places¹ does he mention them; in the latter instance, to include them in his "List of the Fowl or Birds that frequent....Canada"; and in the former, merely to note that "the Turtle-Doves had all passed over the place, in quest of their Southern retreats,...."

In the same year (1687) Richard Blome in his "The Present State of His Majesties Isles and Territories in America," published in London, enumerates the wild pigeons in four places. In New Jersey (p. 80) he says, "The Counterey is well stored with *Wild Deer*,and wild fowl of several sorts; as *Turkeys*, *Pigeons*.... in great plenty." In Pennsylvania (p. 94), "Of Fowls of the Land there is the *Turkey*....*Pheasants*,....*Pigeons*....in abundance." In Virginia (p. 189), "They have great plenty of Fowl; as....*Pigeons*,...." And finally, comes an isolated note (p. 252), "Then there is the *Wood Pigeon*;...."

The year following (1688) Mr. John Clayton speaks of the almost incredible stories he has heard about the pigeon. He says,² "Their Turtle-Doves are of a duskish blue Colour, much less than our common Pigeon: the whole Train is longer much than the Tails of our Pigeons, the middle Feather being the longest. There is the strangest Story of a vast Number of these Pigeons that came in a Flock a few Years before I came thither; They say they came thro' *New England*, *New York* and *Virginia* and were so prodigious in Number as to darken the Sky for several Hours in the place over which they flew, and broke massive Boughs where they light, many like things which I have had asserted to me by many Eye-witness of Credit, that to me it was without doubt, the Relators being very sober Persons, and all agreeing in a story: Nothing of the like ever happen'd since, nor did I ever see past ten in a Flock together that I remember. I am not fond of such Stories, and had suppressed the relating of it, but that I have heard the same from very many."

¹ *Ibid.*, pp. 63 and 237.

² Clayton, John. A Letter from Mr. John Clayton to the Royal Society May 12, 1688, Giving an Account of several Observables in Virginia, etc., p. 30.

In 1698, Hennepin, the first to describe Niagara Falls, says¹ the lower Mississippi "Country affords all sorts of Game, as Turkey-Cocks, . . . , and Wood Pidgeons; . . ." And, on his return eastward from Niagara he says, "We had still Fourscore Leagues to go upon the Lake *Ontario* before we cou'd arrive at Fort *Catarokouri* or *Frontenac*; . . . We wanted then neither Powder nor Shot, and therefore shot at random all that we met, either small Birds, or Turtles, and Wood-Pigeons, which were then coming from Foreign Countries in so great Numbers, that they did appear in the Air like Clouds."

This same year (1698), Gabriel Thomas in "An Historical and Geographical Account of the Province and Country of Pensilvania and West New Jersey in America. London, 1698," finds (p. 13) "in (the) place there are an Infinite Number of Sea and Land Fowl, of most sorts. viz. *Swans*, . . . *Pidgeons* . . ."

Three years later Charles Wolley in "A Two Years Journal in New York. London, 1701," (New York ed., 1860, p. 37) practically repeats the same observation, namely, "They have great store of wild-fowl, as *Turkeys*, . . . *Pigeons*, . . ."

Some time passes before we come to Daniel Coxe's "A Description of the English Province of Carolina, etc. London, 1726" where we have the following (2nd edit., p. 79): "Great companies of *Turkies*, . . . *Pidgeons*, . . ." Again in 1732, "A Letter From South Carolina, etc.," speaks much to the same effect (2nd edit., London, p. 13): "There are . . . great variety of Wild-Fowl, as *Turkeys*, . . . wild *Pigeons*, . . ."

In 1744 Charlevoix in his *History of New France* enumerates the wild pigeons as occurring in Florida² but only once,³ speaks of them in detail. "The pigeons are there (New France), as elsewhere, birds of passage. A missionary observed, in an Iroquois canton, that every morning, from six o'clock till eleven, the air above the gorge in the river, about a quarter of a league wide, was seen to be completely darkened by the number of these birds; that afterwards they all descended to bathe in a large pond near

¹ Hennepin, L. *A New Discovery of a Vast Country in America*, etc. London, 1698, pp. 137, 225.

² Charlevoix, Rev. P. F. X. De. *History of New France, 1744*. Translated by J. G. Shea. New York, 1866. Vol. I, p. 140.

³ *Ibid.*, Vol. II, p. 192.

by, and then disappeared. He adds, that only the males are then seen, but that the females come in the afternoon to go through the same manoeuvre."

On his journey from Pennsylvania to Owego, John Bartram in 1743 found north of Oswego, N. Y. ¹ "all the trees were crouded with wild pigeons, which, I suppose, breed in these lofty shade trees."

Shortly afterwards Peter Kalm, a Swedish naturalist, spent three years in travel in North America (1747-1750). In his "Travels into North America" he twice speaks of the wild pigeons. First during October, 1748, he observes ² that "In the same manner I have seen *wild Pigeons*, which were made so tame as to fly out and return again. In some winters there are immense quantities of wild pigeons in *Pensylvania*." The other note ³ comes in March, 1749, when "*Wild Pigeons (Columba migratoria)*, flew in the woods, in numbers beyond conception and I was assured that they were more plentiful than they had been for several years past. They came this week, and continued here for about a fortnight, after which they all disappeared, or advanced further into the country, from whence they came. I shall speak of them more particularly in another place." This "another place" must be in some other writings of Kalm than his Travels for I searched these with this expressly in view.

Some ten years later, the Rev. Andrew Bernaby, while travelling from Rhode Island to Boston in the month of September, says:⁴ "During the course of my ride from Newport I observed prodigious flights of wild pigeons: they directed their course southward, and the hemisphere was never intirely free from them. They are birds of passage, of beautiful plumage, and are excellent eating. The accounts given of their numbers are almost incredible; yet they are so well attested, and opportunities of proving the truth of them are so frequent, as not to admit of their being

¹ Bartram, John. Observations on the Inhabitants, etc., in Travels from Pennsylvania to Lake Ontario. London, 1751, p. 36.

² Kalm, Peter. Travels into North America. Translated into English by J. R. Forster. Warrington, 1770. Vol. I, p. 210.

³ *Ibid.*, Vol. II, p. 82.

⁴ Bernaby, Rev. Andrew. Travels through the Middle Settlements in North America in the years 1759 and 1760. London, 1798. 3rd edition, pp. 101, 102.

called in question. Towards evening they generally settle upon trees, and sit one upon another in such crowds, as sometimes to break down the largest branches. The inhabitants at such times, go out with long poles, and knock numbers of them on the head upon the roost; for they are either so fatigued by their flight, or terrified by the obscurity of the night, that they will not move, or take wing, without some great and uncommon noise to alarm them. I met with scarcely any other food at the ordinaries where I put up: and during their flight, the common people subsist almost wholly upon them."

About two years later (May, 1762), Alexander Henry on a trip from Michilimackinac to Sault de Sainte-Marie found¹ "Pigeons were in great plenty."

In the period from 1763 to 1795 occur three short notes. In 1766, William Stork gives us "An Account of East Florida, etc. London, 1766," but abstains from giving any data or stories about the pigeon because (p. 51), "The wild pigeons, for three months in the Year, are in such Plenty here, that an account of them would seem incredible." In 1778, J. Carver, London, wrote his "Travels through the Interior Parts of North America in the years 1766, 1767, and 1768," and 1802, Anthony Haswell, Bennington, Vt., published the "Memoirs and Adventures of Capt. Matthew Phelps, 1773-1780." Both (the first on p. 466, the second, Appendix, p. 55) merely mention the pigeons as among the birds recorded on their respective trips.

At the very last of the eighteenth century Isaac Weld, Junior, spent the years 1795, 1796 and 1797 in travels in North America. While on a trip from Montreal to Kingston in the month of September, he remarks² that "As we passed along, we had excellent diversion in shooting pigeons, several large flights of which we met with in the woods. The wild pigeons of Canada are not unlike the common English wood pigeons, except that they are of a much smaller size; their flesh is very well flavored. During particular

¹ Henry, Alexander. *Travels and Adventures in Canada and the Indian Territories Between the Years 1760 and 1776*. New ed., by James Bain. Boston, 1901, p. 63.

² Weld, Isaac, Junior. *Travels through the States of North America, etc. During the years 1795, 1796, 1797*. London, 1799. 2d edition. Vol. II, pp. 42, 43, 44.

years, these birds come down from the northern regions in flights that it is marvellous to tell of. A gentleman of the town of Niagara assured me, that once as he was embarking there on board ship for Toronto, a flight of them was observed coming from that quarter; that as he sailed over Lake Ontario to Toronto forty miles distant from Niagara, pigeons were seen flying over head the whole way in a contrary direction to that in which the ship proceeded; and that on arriving at the place of his destination, the birds were still observed coming down from the north in as large bodies as had been noticed at any one time during the whole voyage; supposing, therefore, that the pigeons moved no faster than the vessel, the flight, according to this gentleman's account, must at least have extended eighty miles. Many persons may think this story surpassing belief; for my own part, however, I do not hesitate to give credit to it, knowing as I do, the respectability of the gentleman who related it, and the accuracy of his observation. When these birds appear in such great numbers, they often light on the borders of rivers and lakes, and in the neighborhood of farm houses, at which time they are so unwary, that a man with a short stick might easily knock them down by hundreds. It is not oftener than once in seven or eight years, perhaps, that such large flocks of these birds are seen in the country. The years in which they appear are denominated 'pigeon years'."

The first note in the nineteenth century comes the first year, when Alexander Henry, in his journal, writes, Apr. 11, 1800, that, "I embarked in my canoe for Portage la Prairie. Weather excessively hot. Wild pigeons passing N. in great abundance." Again, on the 23rd of April, 1802, when on the east side of the Red River he says¹ "River clear of ice. Pigeons passing N."

"The Expeditions of Zebulon Montgomery Pike," by the same editor,² shows that Pike on a trip from Leech River to St. Louis, April 28, 1806, "Stopped at some islands about ten miles above Salt River, where there were pigeon-roosts, and in about 15 minutes my men had knocked on the head and brought on board 298.

¹ Henry, Alexander, *The Manuscript Journals of*. By Elliott Coues. Three vols., New York, 1897. Vol. I, pp. 4 and 195.

² Pike, Zebulon Montgomery, *The Expeditions of*, During the Years 1805-6-7. New Edition. By Elliott Coues. 3 vols. New York, 1895. Vol. I, p. 212.

I had frequently heard of the fecundity of this bird and never gave credit to what I then thought inclined to the marvellous; but really the most fervid imagination cannot conceive their numbers. Their noise in the woods was like the continued roaring of the wind, and the ground may be said to have been absolutely covered with their excrement. The young ones which we killed were nearly as large as the old; they could fly about ten steps, and were one mass of fat; their craws were filled with acorns and the wild pea. They were still reposing on their nests, which were merely small bunches of sticks joined, with which all the small trees were covered. Met four canoes of the Sacs, with wicker baskets filled with young pigeons. They made motions to exchange them for liquor, to which I returned the back of my hand."

Later, in the same year, we have another note of interest when Thomas Ashe, while at Erie, Pa., in December, 1806, finds the same fondness for salt springs which the Jesuits remarked in 1656. He writes¹ as follows: "The salt lake and springs are also frequented by all the other kinds of beasts, and even by birds; and from the most minute enquiries, I am justified in asserting that their visitations were periodical; except doves, which appear to delight in the neighborhood of impregnated springs, and to make them their constant abode. In such situations they are seen in immense numbers, as tame as domestic pigeons, but rendered more interesting by their solitary notes and plaintive melody."

The succeeding year Pursh makes a botanical observation which is interesting in this connection. When at Martin Creek, Pa., he says:² "This morning I took an excursion accompanied by — who wanted to show me the Leek or Pigeon pea, as he calls it. . . . The Pigeon berries or Pigeon peas we could not find, untill we returned to the house, where a place was where they commonly grow: in howing up some ground they showed me the roots by which I found them, to be probably nothing else, than the tuberculis of a species of *Glycine*, resembling marrowfat peas very much: the pigeons scratch them up at certain times of the year and feed upon them very greedily."

¹ Ashe, Thomas, Esq. *Travels in America.* Performed in 1806. London, 1808, pp. 49, 50.

² Pursh, Frederick, *Journal of. The Gardener's Monthly*, Vol. XI, pp. 14, 15.

At the same time, James Mease discusses ¹ the pigeon at some length. "The *columba migratoria*, or common wild pigeon of the United States, winters in the woods of the southern states and Florida, and pass over to the Bahama Islands. After their return in the Autumn to their Winter quarters, they sometimes, in mild Winters, remain in the middle and northern states. During the present season (1806-7), which, upon the whole, has not been severe, they were occasionally seen in our markets. The rev. Mr. Hall gives us the following curious account of the pigeon roosts in the Mississippi territory.

"Another curiosity, which occurred to my view, was the pigeon roost on a branch of Big Black, about sixty miles below the Chickasaw nation. An account of the phenomenon there exhibited, carries with it such an air of the marvellous, that, had I been the only spectator, it would have been passed over in silence. The pigeons had taken their station in and about a place known by the name of the Hurricane Swamp. The greater part of the large timber had been blown down, and they had perched on the branches of the small timber that remained; and which, being broken by them, now hung down like the inverted bush of a broom. Under each tree and sappling, lay an astonishing quantity of dung, of which, from the specimens we saw, there must have been not only hundreds, but thousands, of waggon loads. Round each resting place was an hillock raised a considerable height above the surface, although the substance had been there eighteen months when we made our observations on the place. At that time the heaps were, no doubt, greatly sunk. What bounds they occupied we could not ascertain as the swamp was so full of brambles and fallen timber that we could not leave the road. It is near a mile in diameter; and as far as I can recollect, their traces were the chief part of the way, and about an hundred paces on the north side of the swamp.'

"To give an idea of the number and weight of these pigeons, Mr. H. then relates, that a hickory tree, of more than a foot in diameter, was alighted on by so many of these birds, that its top was bent down to the ground, and its roots started a little on the

¹ Mease, James. A Geological Account of the United States, etc. Philadelphia, 1807, pp. 3417-3149.

opposite side, so as to raise a bank. Trees of a brittle structure were often broken off by them.

"We leave our readers to ponder these things without comment of ours.

"The Rev. Mr. Harris, of Massachusetts, in his 'Tour to the State of Ohio,' gives an account equally curious, of the pigeon roosts of that state."

The "Mr. Harris" of whom Mease speaks is Thaddeus Mason Harris who "Made in the Spring of the Year 1803," "A Tour into the Territory Northwest of the Alleghany Mountains." His account¹ of the pigeon roosts follows: "The vast flights of pigeons in this country seem incredible. But there is a large forest in Waterford, containing several hundred acres, which has been killed in consequence of their lighting upon it during the autumn of 1801. Such numbers lodged upon the trees that they broke off large limbs; and the ground below is covered, and in some places a foot thick, with their dung, which has not only killed all the undergrowth but all the trees are dead as if they had been girdled.

"This account which I received from credible persons at Waterford when I was there, May 13, 1803 is confirmed by a letter written me since my return, by my much-esteemed friend, the Rev. Mr. Story, dated Marietta, June 3, 1803. 'I have visit two pigeon roosts, and have heard of a third. Those I have seen are astonishing. One is supposed to cover one thousand acres: the other is still larger. The destruction of timber and brush on such tracts of land by these small animals is almost incredible. How many millions of them must have assembled to effect it! especially as it was done in the course of a few weeks! A more particular statement will be given this subject in a communication I intend making, agreeably to your request, to the American Academy of Arts and Sciences.'"

In 1810 (April 18), John Bradbury, while proceeding to the country around the Naduet River² "soon discovered that pigeons were in the woods. I returned and exchanged my rifle for a fowling

¹ Mason, Thaddeus Mason. *The Journal of A Tour into the Territory Northwest of the Alleghany Mountains; Made in the Spring of the Year 1803*, etc. Boston, 1805, pp. 179, 180.

² Bradbury, John. *Travels in the Interior of America in the Years 1809, 1810, 1811*, etc. Liverpool, 1817, pp. 44, 45.

piece, and in a few hours shot 271, when I desisted. I had an opportunity this day of observing the manner in which they feed; it affords a most singular spectacle, and is also an example of the rigid discipline maintained by gregarious animals. This species of pigeon associates in prodigious flocks: one of these flocks, when on the ground, will cover an area of several acres in extent, and are so close to each other that the ground can scarcely be seen. This phalanx moves through the woods with considerable celerity, picking up as it passes along, every thing that will serve for food. It is evident that the foremost ranks must be the most successful, and nothing will remain for the hindmost. That all may have an equal chance, the instant that any rank becomes the last, they rise, and flying over the whole flock, alight exactly ahead of the foremost. They succeed each other with so much rapidity, that there is a continued stream of them in the air; and a side view of them exhibits the appearance of the segment of a large circle, moving through the woods. I observed that they cease to look for food a considerable time before they become the last rank, but strictly adhere to their regulations, and never rise until there are none behind them."

In 1819, Fearon, while in the Illinois country, found,¹ "hawks, buzzards, and pigeons in tolerable quantities."

About the same time, the famous Schoolcraft,² "in walking along some parts of the shore, observed a great number of the skeletons and half-consumed bodies of the pigeon, which, in crossing the lake, is often overtaken by severe tempests, and compelled to alight upon the water, and thus drowned, in entire flocks, which are soon thrown up along the shores. This causes the shores of Lake Michigan to be visited by vast numbers of buzzards, eagles and other birds of prey. The Indians also make use of these pigeons, as food, when they are first driven ashore, preserving such in smoke, as they have not immediate occasion for."

Two years later Howison writes³ of the pigeon as follows: "Long

¹ Fearon, Henry Bradshaw. *Sketches of America: etc.* London, 1819. 3rd edition, p. 257.

² Schoolcraft, Henry R. *Narrative Journal of Travels from Detroit Northwest . . . in the year 1820.* Albany, 1821, p. 381 (Aug. 25).

³ Howison, John. *Sketches of Upper Canada.* Edinburgh, 1822. 2nd edition, pp. 174, 175.

Point abounds with game of various kinds. . . . Immense flocks of the passenger or wild pigeon, frequent this and other parts of Upper Canada during the spring and autumn; and myriads of them are killed by firearms, or caught in nets by the inhabitants; for they fly so close, and in such numbers, that twenty or thirty may sometimes be brought down at a single shot."

In 1827 John Lee Williams in "A View of West Florida" (p. 30) gives the "Pigeon — *Columba migratoria*" — as "rare". Again, in 1837, in "The Territory of Florida, etc. New York. 1837" (p. 74) he says, "This kind is not so numerous in general, as the turtle dove, and ground dove."

A more or less extended characterization of the species comes in 1829, when Macauley wrote¹ the following summary: "The pigeon is a migratory bird. In spring they pass to the north, where they spend the summer, and in autumn they return to the south, where they spend the winter. The periods of their arrival and departure are not well defined. Sometimes they come as early as the latter part of March, while at other times, a month later. This seems to depend on the season, their arrival being earlier or later, according to the forwardness or backwardness of the spring. They pass in their periodical migrations, in flocks, which vary greatly in numbers. Some extend a mile or two in length, and consist of a countless multitude, while others are small. The flocks are often seen following each other in quick succession, and at short intervals. These migrations frequently continue for several days. After their arrival, they remain in flocks, for a short time, and then disperse in pairs in order to breed. They build their nests on trees, and usually have two young at a time. They hatch every month. They subsist on mast, wheat, peas, oats, rye, and insects. . . . They are rather smaller than the domestic pigeon, and are good food. The domestic and wild pigeon do not breed together. The accounts which are given of the number of pigeons in the uncultivated country, will appear almost incredible to those who have never seen their nests. Sometimes they occupy several hundred acres with their nests. Twenty, and even thirty nests have been counted on one tree."

¹ Macauley, James. *The Natural, Statistical and Civil History of the State of New York*. New York, 1829. 3 vols. Vol. I, pp. 495, 496.

In 1832, Timothy Flint remarks¹ that, "Pigeons sometimes are seen in great flocks. Their social and gregarious habits incline them to roost together, and their places of resort are called 'pigeon roosts.' In these places they settle on all the trees for a considerable distance around, in such numbers, as to break off the branches."

In the same year, Vigne notes² "the woodcock, snipe, pigeons and wild fowl, in great abundance," and says, "I amused myself with shooting pigeons which are to be found on the island (Mackinac) in great numbers. I was quite surprised at the extraordinary facility and quickness of eye, with which my guide, half Indian and half Canadian, discovered them sitting in the thickest foliage."

Some years later Hugh Murray gives³ a more pertinent note when he marvels at the numbers in the pigeon flocks. "But no bird equals in number the wild pigeons which, at particular seasons, move in vast flocks, or rather swarms, that darken the air like locusts. A body of them once hovered three or four days over the capital, when a continued war was carried on against them by all who could muster fire-arms of any description. The feathered tribes, in unfrequented places, fall easy victims, owing to their having no fear of man."

And, finally, in 1844, Featherstonhaugh in an "Excursion through The Slave States":⁴ "A new and very interesting spectacle presented itself, in the incredible quantities of wild pigeons that were abroad; flocks of them many miles long came across the country, one flight succeeding to another, obscuring the daylight, and in their swift motion creating a wind, and producing a rushing and startling sound, that cataracts of the first class might be proud of. These flights of wild pigeons constitute one of the most remarkable phenomena of the western country. I remember once, when amongst the Indians, seeing the woods loaded from top to

¹ Flint, Timothy. *The History and Geography of the Mississippi Valley*. Second edition. Cincinnati, 1832. Vol. I, p. 73.

² Vigne, Godfrey T. *Six Months in America*. 2 vols. London, 1832. Vol. I, p. 89; vol. II, p. 115.

³ Murray, Hugh. *An Historical and Descriptive Account of British America*. 3 vols. Edinburgh, 1839. Vol. I, p. 350.

⁴ Featherstonhaugh, G. W. *Excursion through The Slave States*. New York, 1844, p. 88 (Arkansas).

bottom with their nests for a great number of miles, the heaviest branches of the trees broken and fallen to the ground, which was strewn with the young birds dead and alive, that the Indians in great numbers were picking up to carry away with their horses; many of their dogs were said to be gone mad with feeding upon their putrified remains. A forest thus loaded and half destroyed with these birds, presents an extraordinary spectacle which cannot be rivalled; but when such myriads of timid birds as the wild pigeon are on the wing, often wheeling and performing evolutions almost as complicated as pyrotechnic movements, and creating whirlwinds as they move, they present an image of the most fearful power. Our horse, Missouri, at such times, has been cowed by them, that he would stand still and tremble in his harness, whilst we ourselves were glad when their flight was directed from us."

THE BREWSTER'S WARBLER IN MASSACHUSETTS.

BY JULIA WINGATE SHERMAN.

EARLY Sunday morning, May 19, 1907, my daughter and I went on a bird-walk near our home in Roslindale, which is one of the many beautiful suburbs of Boston. When a short distance from the house we heard a Golden-winged Warbler give his zee-zee-zee, as I then supposed. My daughter not having seen one that season, we stepped out of our path to take a look at the singer. Imagine my surprise — not a Golden-winged but a fine male Brewster's Warbler was perched before us. He sang over and over again his high, lazily given song which so closely resembles that of the Golden-wing that it could easily be mistaken for it. On careful listening, at close range, it seemed higher and finer in quality. This specimen was in fine typical plumage, but was wholly white underneath. He kept for some time on a low, isolated, gray birch where he showed himself in all lights.

We continued our walk in the direction of Tom William's Pond.

When within a short distance of it, we saw, in a mixed flock of migrating warblers, either the same bird or one in similar plumage.

A few days later a pair of Brewster's Warblers were reported nesting in the Arnold Arboretum. I did not see the birds or the nest, but I was told by Mr. Charles J. Maynard and others who did see them, that the nest contained five eggs, all of which hatched. Dr. Faxon reported the young to have left the nest when seven days old. Mr. Maynard sent me a water-color drawing of the female and young, which he made at the time. This female showed an extensive, nearly black throat patch, also a large yellow patch in the wing.

During the spring of 1908, a pair of Brewster's Warblers again built in the Arboretum near their old site, but on the other side of the road. This nest was found by me after having been given a clew by Mr. John Carver of its supposed location. It was placed a few inches from the ground and rested in the center of the upright shoots of a young cornel bush. Eventually it contained four eggs. Three disappeared, leaving one on which the female sat for several days but finally abandoned it. The last visit I made to the nest, which was some time later, showed the egg still there. I have since been told that the nest is now included in the Harvard University Collection.

Mr. Carver told me that the birds started to build again, a few feet away, but that they did not complete the nest.

This female, of which I made a water-color drawing, showed a dark dusky throat patch, not clearly defined at its base, but blended into the pale gray of the upper breast. It was blackest at the base of the bill and at the center of the throat.

The black line through the eye was broader and extended back farther than did that on the Brewster of the preceding year. She differed also in showing two broad yellow wing-bands.

June 5, 1910, my son's attention was attracted to a male Golden-winged Warbler carrying nesting material not far from our house. He told me about it and took me to the place that afternoon. We soon found the male, a beautiful specimen, easily recognized and distinguished from other male Golden-wings by his jet black throat patch which extended up and back on either side of his neck. This took away its usual triangular shape and gave it rather the appearance of a bib.

Presently his mate flew to him. I immediately recognized in her a female Brewster's. They mated and sported about for some time. Although I had read that it was believed that these species do interbreed, I never expected to have the actual experience come within my observation.

This female Brewster's was in much the same plumage as the last described. She differed, however, in having the dusky throat patch lighter in color. It bore the same character in being darker towards its center and directly under the bill. The one of 1908 had a nearly black throat patch, mottled slightly in appearance. The black line through the eye was narrower and placed on a pale gray cheek. The white line above the eye was uniform in width and looked as if put on with a brush, it was so beautifully defined. The white line below the eye was shorter. The whole tone of the back was more olivaceous. Two bright yellow wing-bars divided by an olive or dark band showed on the wing.

The entire underparts were washed with yellow, which showed quite bright on the middle of the breast in good light. The crown was bright dandelion yellow running into bronzy yellow toward the back of the head.

Seeing such a mismated pair, I knew the rest of their history would be interesting and determined to locate their nest if possible. This I did not succeed in doing until on the 13th, by inadvertently walking almost onto it; the mother bird flew off, thus pointing an index finger to the spot.

It was placed in a blossoming backberry bush about six inches from the ground. It rested in the center of the bush, being supported by the upright briery canes. The material used in its construction was oak and chestnut leaves, with strips of red cedar bark, and grasses for a lining and to hold the nest together. The single strand of horse hair was inside. All the material was found close at hand. The leaves were whole.

It was securely yet loosely made, and so deep (2½ inches on the inside) that the little nestlings looked well protected. It was so well concealed that I always had to look sharply to see it, even knowing its exact location. Living grasses were pulled up about it in such a way as to completely hide it. It contained, when found, four eggs similar to those, as I remember them, of the

Arboretum Brewster's of 1908. They were white, speckled with irregular patches of brown; more heavily on the larger end. Each egg lay with its smaller end towards the center of the nest.

June 21. I visited the nest from which the mother bird flew. Knowing incubation must be nearly completed I went away as quickly as possible.

June 22. After supper I went to the nest and found the four eggs hatched, and such helpless mites. Too helpless to move.

June 24. The female flew from the nest on my going to it. The young were nearly twice the size as last seen. The male Golden-wing was busy carrying green caterpillars to them.

June 25. The female was still brooding. The young had wing-feathers one quarter of an inch long, and the general development was very marked.

June 26. I found both parents away. This afforded me an excellent opportunity to look at the nestlings closely. Both parents soon returned bringing two green caterpillars each. These the babies soon devoured. Their eyes had opened and their daily increase in size was very noticeable.

June 29. The young were covered with an olive down above, and so crowded in the nest that only their heads and backs were visible. I put my hand over the nest. Not a sound came from it and none attempted to leave it. The mother bird was away but returned without food.

Early Thursday morning, June 30, the nest was empty. I could not imagine those helpless looking nestlings of the night before, winging their way out into the world, and feared some accident had befallen them. Although there were no signs of either of the parents about I determined to wait a while. Soon I was rewarded. The mother bird came, bringing two green caterpillars which, on seeing me, she swallowed; and leaving the tree, on which she first perched, she flew unconcernedly about for some time.

Finally she went into a tree with intervening trees between us. Closely watching her vicinity, I saw her drop into the tall grass for a second and fly up onto the tree again. Twice she did this, but so quickly that I could not see whether she had food or not.

Going to the places where she dropped I found two fledglings. From further watching, I concluded the other two were in a clump of blackberry bushes growing in a rock heap.

One of the fledglings, on pursuit, flew into a cranny of a nearby stone wall. Here I watched him for some time. He was olivaceous brown throughout, being lighter on his abdomen. The wings were dull brown with two wide clear dandelion yellow wing-bars. The wings were very large in comparison to the bird. Some down still clung to the top of his head.

It seemed a miracle that a fledgling so tiny, just seven and one half days from the egg, could fly with such wonderful strength, twenty feet in one flight, as I saw him do, and catch his perch like his experienced parents.

Two days later the little clearing where this remarkable pair of warblers made their home, settled into its usual quietness. No more the alarm note of the anxious mother greeted me, no more the love song of the Golden-wing floated to his mate. Nothing but the vacant nest gave evidence of this history making pair.

THE LITTLE GULL, *LARUS MINUTUS* PALL., IN MAINE,
WITH REMARKS ON ITS DISTRIBUTION, AND
ITS OCCURRENCE IN AMERICA.

BY ARTHUR H. NORTON.

ON July 20, 1910, an adult male *Larus minutus* was taken at Pine Point, Scarborough, Maine, and the following day it came into my hands.

The bird is in nuptial plumage, with the post nuptial moult begun. The outer primaries are much worn, while some of the inner ones, fifth, sixth, and seventh, are new, not yet having attained their full growth. It wears the black hood, though this is sprinkled on the forehead, crown, and chin with a few white feathers of the post nuptial dress. While apparently in good health, it was almost entirely free from deposits of fat. Its weight, with stomach empty, was $3\frac{1}{2}$ ounces. The right testis was 3 mm.

long. Total length, 242 mm. (11.50 in.); total extent, 692 mm. (27.25 in.); wing, 212 mm. (8.38 in.); culmen, 24 mm. (.94 in.); tarsus, 25 mm. (.97 in.); middle toe, 26 mm. (1.00 in.). Bill purplish black, feet dusky flesh color.

The bird had been seen in the same vicinity several times during the previous six weeks, so I was informed, usually alone when feeding, though resting on one or more occasions with the Bonaparte's Gulls.

This is apparently the first occurrence of the Little Gull in New England, the third in the United States, and about the sixth or seventh occurrence in America. It is, therefore, entitled to rank as an occasional straggler to this continent, and is deserving of renewed interest. Consequently it seems timely to mention its field and distinctive marks, and to review its distribution and its American records.

The adults are distinguished at once by the broad white posterior border of the wing, without black, the pale pearl gray mantle, and the slaty lower surface of the wings. The young, by the inner vanes of the outer primaries being chiefly white, the inner primaries with both webs gray, their tips white, the white increasing in length as it proceeds in, and without black subterminal areas. Moreover, it is the smallest known gull.

In summer it occurs in Sweden, Russia, throughout northern Siberia, more rarely in southern Siberia, and has been recorded from the southern part of the Okhotsk Sea.¹ It is found throughout the year on the Mediterranean and Adriatic seas.² Winters in northern Africa and northern India,³ and in the North Sea in the vicinity of Heligoland.⁴ At the latter place the fall migration is said to be a striking phenomenon.⁵ In the British Islands it occurs only as a frequent visitant. It is a bird partial to lacustrine and estuarine districts.

In America, one was obtained at the Bermudas Jan. 22, 1849, by Major Wedderburn, and another was killed the following

¹ Taczanowski, Mem. St. Petersburg Acad. Sci., VIII series, XXXIX, II, pp. 1043, 1044.

² Temminck, Man. d'Orn., pt. IV, p. 490.

³ Taczanowski, l. c.

⁴ Gätke, Heligoland as an Orn. Observatory, p. 556.

⁵ Gätke, l. c., p. 555.

month.¹ A few were seen, and a specimen procured, near Mazatlan, Mexico, March 27, 1868, by Colonel Grayson.²

An immature specimen was shot at Fire Island, Long Island, N. Y., about Sept. 15, 1887, and is preserved in the American Museum of Natural History, New York City,³ while another specimen was taken at Rockaway Beach, Long Island, N. Y., May 10, 1902. This was a female "in immature plumage" and is preserved in the Museum of the Brooklyn Institute of Arts and Sciences,⁴ Brooklyn, N. Y. We therefore have five unchallenged American records.

There apparently exist important discrepancies between the Sir John Franklin record and the grounds advanced for its elimination; therefore it may properly be reconsidered. This record was rejected largely on account of the following statement from Dr. Elliott Coues: "Professor Baird thinks that there is no good reason to consider this bird an inhabitant of or even a visitor to North America. It has been included in our fauna on the strength of a statement of Sabine, who saw a small Gull, with black head and bill, greatly resembling the *Larus minutus*. This, however, was before *Larus bonapartei* was described and made known by Richardson in F. B. A., and a poorly preserved or immature specimen might easily be referred to *Larus minutus* by one ignorant of the existence of two species."⁵

Swainson and Richardson say: "A specimen obtained on Sir John Franklin's first expedition, was determined by Mr. Sabine to be a young bird of the first year of this species [*L. minutus*], exactly according with M. Temminck's description."⁶

Coues has said: "Saw a small Gull with black head and bill." This is plainly an adult bird, and if only seen belongs in the limbo where Dr. Coues placed it. Richardson, however, has said: "Obtained a young bird of the first year . . . according exactly with M. Temminck's description."

On referring to Temminck for diagnostic features of the young

¹ Hist. N. Am. Bds., Water Bds., II, p. 265.

² *Ibid.*

³ Dutcher, Auk, V, p. 172.

⁴ Braislín, Auk, XX, p. 52.

⁵ Proc. Philadelphia Acad. Nat. Sci., XIV, 1862, p. 311.

⁶ Fauna Bor.-Amer., II, p. 426, fide Dutcher, Auk, V, p. 171.

of the year we find the following statement: "Les quatre premières rémiges noires sur les barbes extérieures et à leur bout, mais blanches sur les barbes intérieures; *les trois suivantes cendrées en dehors, et la point blanches.*"¹ (Italics mine.) That a part of the primaries are increasingly white tipped, and the secondaries largely so in birds of the first year, is also shown to be true by Dr. Taczanowski.² The contrary is the case in *Larus philadelphia* which has all the primaries, and even the secondaries, broadly black tipped, merely surmounted so to speak with small white spots. Thus the posterior border of the wing is entirely black in the latter species. In *Larus franklinii* the outer *five* or *six* primaries, in this plumage, are black on both webs.³

In view of this, unless it can be shown that Swainson and Richardson are in error, in their detailed statement, it seems that the British American record should be reinstated. We have still one hopeless report to notice in closing. I refer to Temminck's statement that "this bird appears also in Greenland."⁴

GENERAL NOTES.

The Red-billed Tropic-bird in Arizona.— In 'The Auk' for October, 1905 (Vol. XXII, p. 408), Mr. George F. Breninger recorded a specimen of the Yellow-billed Tropic-bird taken near Phoenix, Arizona, in April, 1905. This bird, which, among others, was recently presented by Dr. L. C. Sanford to the American Museum of Natural History, proves to be a Red-billed Tropic-bird (*Phaethon aethereus*). The dull yellowish color of the bill, which doubtless led to the error in identification, is a mark of immaturity, as is also the broad and unelongated pair of central tail-feathers.

Mr. W. W. Cooke informs me that there is no other Arizona record of the Yellow-billed Tropic-bird. Hence the species must be removed from the list of birds of that territory and its place taken by the Red-billed

¹ Man. d'Orn., II, p. 788.

² Mem. St. Peter. Ac., VIII, S., XXXIX, II, pp. 1043, 1044.

³ Coues, Bds. Northwest, p. 655.

⁴ Man. d'Orn., IV, 1840, p. 490.

species of which there seems to be no previous Arizona record. The date given on the label of this specimen is April 10, 1905.—W. DE W. MILLER, *American Museum of Natural History, New York City.*

Status of the Black Duck (*Anas rubripes*) in Colorado.—The appellation of that form of Black Duck found in Colorado is certainly having its quota of vicissitudes, which may in part be accounted for by the fact that it is a rare species in our State, only four absolute records having been made to date. It may be well to note here another specimen—a mounted bird (a male) in the Colorado Museum of Natural History, Denver. It was taken by W. N. W. Blayhey at Loveland, Colorado, in 1907. This specimen and one in the writer's collection are the only two known birds available for identification.

In 'The Birds of Colorado,' by W. W. Cooke, March, 1897, our form of this duck is given as, "*Anas obscura*. Black Duck. . . . An eastern species finding in Colorado its most western extension." In the first supplement to this volume, March, 1898, the same name is retained. In the second supplement, May, 1900, Mr. Cooke changes the name of our form of this duck and refers it to the more southwestern type in the following words: "In place of 133, *Anas obscura*. Black Duck. Put 134a. *Anas fulvigula maculosa*. Mottled Duck. Although no specimens of this duck taken in Colorado have been examined by the present writer, yet there can be no doubt that the three specimens reported really belong to this subspecies."

We wonder why Mr. Cooke felt justified in making such an unqualified statement in view of the fact that this change to *Anas fulvigula maculosa* was made by him wholly on geographical grounds. It appears also that the original reference of our form to *Anas obscura* was also made entirely on geographical grounds.

In the light of subsequent events we are again reminded of how unsafe it is to refer any bird to any particular form purely on geographical grounds, without a single specimen ever having been identified as belonging to such form, unless it is stated clearly that there is a question as to the form to which it should be referred. When it has been once indubitably established that a certain form, be it, for example, a certain subspecies, is found in any given locality we of course have the right to consider all the birds of this type reported from this locality as being of this particular subspecies until another subspecies has been discovered.

Since the appearance of the second supplement to 'The Birds of Colorado' it has been assumed by Colorado ornithologists that our form of Black Duck is *Anas fulvigula maculosa* (Mottled Duck), as is evidenced by recent writings. The present writer never having seen more than the one specimen referred to above as being in his own collection, and not wishing to trust in a final test the obscurities of book descriptions on a female bird of semi-pronounced characters, noted a possible change of name on the specimen's tag from *Anas obscura* to *Anas fulvigula maculosa*.

to be determined at such time when the specimen could be sent to Washington for comparison with large series. A reference to this specimen appeared under the latter name in an 'Annotated List of the Water Birds of Weld, Morgan and Adams Counties, Colorado,' etc., by the writer in 'The Auk,' Vol. XXVI, No. 3, July, 1909, p. 280.

This specimen was recently sent to Washington and examined by Mr. Harry C. Oberholser, who pronounced it *Anas rubripes* (formerly *Anas obscura*), Black Duck. Believing that Dr. Dwight had, in 'The Auk,' October, 1909, demonstrated that there is no subspecies of the Black Duck, Mr. Oberholser made no attempt to refer it to any subspecies.

Upon its return I took the specimen, together with Coues's and Ridgway's manuals, to the Colorado Museum of Natural History and made a very careful comparison of my bird with the specimen there, which bears the name, "*Anas fulvigula maculosa*." The comparison convinced me that that specimen is also *Anas rubripes*. To confirm this opinion, I sent to Mr. Oberholser a careful description of the bird together with a drawing of its head showing patches of buff and black specking and streaking. In an answer just received from him he says, "I have not much doubt of its being *Anas rubripes*."

It has never to my knowledge been assumed that more than one form of the Black Duck exists in Colorado. That *Anas rubripes* is found here is now positive, and until some other form is proved to be co-existent, the Black Ducks of our State should be referred to this form.—A. H. FELGER, Denver, Col.

The Blue-winged Teal in Cuba in Summer.—I beg to report that on June 12, 1910, while collecting in a brackish lagoon named "Laguna de Manati," which lies on the bay about 4 leagues from the town of Guantano, I saw three Blue-winged Teal (*Querquedula discors*), two males and a female, swimming in the lagoon. Thinking they might be wounded birds and unable to fly I waded in after them and was very much surprised to see all of them take to wing and fly off, finally circling again over the place where I stood and lighting on the other side of the mangroves which surround the lagoon. I have not had time to return to the lagoon since, so do not know how long they remained there.—CHARLES T. RAMSDEN, Guantano, Cuba.

The Turnstone at Grosse Isle, Michigan.—In April last I had some dredging done along the river front bordering my place on Grosse Isle which resulted in a bank being thrown up along the shore for some distance and reaching well out into the river. Here it was washed down by the waves almost to the water's surface, forming, in some places, a rather muddy little flat. On May 29, 1910, I happened to see a flock of waders circle down to the end of the cut, and upon investigation found them to be a flock of thirty Turnstones (*Arenaria interpres morinella*), all in rather high plumage. They would bunch closely together near the water's edge,

and every now and then, without any apparent cause of alarm, would fly out over the water as one bird, make a wide circle, and invariably return to the same spot. This flock remained here until it was too dark to see them further, but was gone the next morning. While Turnstones are not uncommon on the shores of Lake Erie they seldom ascend the river. I am aware of but one prior record for the county.— B. H. SWALES, *Grosse Isle, Mich.*

A Massachusetts Record for the White-tailed Kite.— As this bird is rare east of the Mississippi River, and in fact is scarcely much more than a straggler even in that region, its appearance on the Atlantic coast as far north as New England is very extraordinary. On May 30 last I saw an adult bird at very close range on the island of Martha's Vineyard. It was so close and was watched with glasses for such a long time, both by myself and Mr. C. E. Brown of the Boston Society of Natural History, that there was not the slightest doubt in our minds as to its identity. We were spending several days on the island studying the birds and on one of our daily trips came upon this specimen very unexpectedly at a fresh meadow at the head of one of the ponds. When first seen he was sitting on a post not a hundred yards distant and we took him to be a marsh hawk, but on looking again before even raising our glasses, we saw that he was something very different. His white head and tail and more especially the black lesser wing coverts were very distinctive at that distance and immediately attracted our attention. The ashy blue back was what suggested an adult Marsh Hawk at first glance. From this distance we watched him for some time with our glasses and on a nearer approach he flew to another post, which he shortly abandoned to soar above the meadows at a height of a hundred or more feet. There were many Red-wing Blackbirds nesting in the bushes by the stream and they were so alarmed at his presence that they several times attacked him. We imagined he was looking for mice or perhaps frogs, as he apparently did not bother the birds. When he saw his prey below he would commence fluttering like a Sparrow Hawk, and then, on seeing his chance, he raised his wings above his back, so that they almost touched, whereupon he descended, gaining speed as he went. Instead of checking himself on nearing the ground, he seemed to dive headlong into the grass and bushes, remaining out of sight several seconds before reappearing. We were unable to make out if he had anything in his claws when he arose again. This process was repeated several times and was a remarkably interesting performance. Finally he lit on another post and I crawled towards him keeping close to the fence, so that I actually got within ten yards of him before he flew, getting a wonderful view. He arose from there very much startled at my presence, flew over the hills and disappeared. The following week, on our next trip, which we made in the hopes of again locating him, he was seen once more at long range, but except for these two times we never caught another glimpse of him. I believe this Kite has never before been seen in New England, but of

course it can only be regarded as a very rare straggler, scarcely deserving a place on our New England list.—S. PRESCOTT FAY, *Boston, Mass.*

Notes on the Bald Eagle in Georgia.—It is commonly stated that the Bald Eagle will not lay a second set of eggs after the first have been taken. A fine set of eggs were taken Dec. 5, 1909, by Mr. Frank N. Irving, and are now in his collection. This pair of birds laid again and the young of the second litter were taking their first lessons in flying on the 10th of April. A second nest that was robbed on the 12th of December contained young on the 3d of April.

Another very common statement is that these eagles mate for life. On March 13th I killed a male bird near a nest containing young. This was a fully matured pair of birds which the owner of the property desired to have destroyed, and they were very closely watched. Only three days later, on the 16th, it was reported that the female bird had another mate. This was proved to be true on the next day when an immature male bird was found feeding the young in her company. This nest was successfully photographed from a neighboring tree by Mr. J. F. Jennings of Nuangola, Penna. Neither of the old birds came near enough to get into the picture. All of them, however, are now in a private collection.

Possibly Chatham County is particularly favored by the Bald Eagle. Fully fifteen nests are known and their locations are "confided" to me. All of them have been well proved. But "mine" is a nest that was in process of building on the 6th of March last and did not contain young until the 17th of May. The pair are both in immature plumage, though the female is beginning to show distinct traces of white in the tail. Though this nest is in a position in plain sight of thousands of passers-by to a popular suburban resort it is so neatly concealed by intervening branches as to defy detection. "My" birds hatched in 83 days and in forty-two days more the young had left the nest. Times of incubation have been variously stated to me as from 34 to 42 days. Fresh eggs have been taken here from the middle of November till late in March.—W. J. HOXIE, *Savannah, Ga.*

Hawk Owl (*Surnia ulula caparoch*) in Michigan.—Another record of this bird in this section of Michigan is a female taken around November 6, 1906, in the vicinity of Port Huron, St. Clair County, by a Mr. Walters. This bird was sent in to Mr. Uppinger, Detroit, for mounting. Mr. Walters also sent in the specimen recorded by Taverner, from the same locality, Nov. 19, 1905. (See Auk, 1906, p. 108.)—B. H. SWALES, *Grosse Isle, Mich.*

The Snowy Owl (*Nyctea nyctea*) Taken in South Carolina.—I am indebted to Mr. James Henry Rice, Jr., secretary of the Audubon Society of South Carolina, for information concerning the capture of this boreal bird. The specimen was taken by two small boys $3\frac{1}{2}$ miles northwest of Winnsbow, Fairfield County, on November 28, 1908. It came into the

possession of Mr. R. Henry Phillips, game warden of Fairfield County, who skinned the bird, and from whom I received it in exchange. Mr. Phillips says it was taken after a storm of wind and sleet, and is a female.

The first specific record for the State was mentioned by Bartram in his 'Travels' (second edition, 1794, 285). Audubon¹ says: "Several individuals have been procured in South Carolina, one on James Island [near Charleston], another, now in the Charleston Museum, on Clarkson's plantation [near Columbia], and a fine one was shot at Columbia, the seat of government, from the chimney of one of the largest houses in that town, and was beautifully preserved by Professor [Lewis R.] Gibbes of the Columbia College."

Mr. Leverett M. Loomis,² in reference to a specimen seen by him at Chester, says: "During the early part of December, 1886, I saw an individual several times under circumstances that dispelled all doubt from my mind as to its identity."

About the middle of February, 1899, I picked up a feather in a primeval forest near my house which must have belonged to a Snowy Owl, as the color, texture, size, elasticity, etc., plainly showed that it was an owl's feather. It was marked like some feathers of the White Gyr Falcon (*Falco islandus*), but did not possess the rigidity of that bird's feathers.

As far as my information extends this makes the fourth specimen of the Snowy Owl taken in South Carolina since Audubon wrote.—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

Nesting Colonies of the Green-crested Flycatcher and Parula Warbler, Past and Present.—On May 31, 1893, during a visit to my brother while at School at Suffolk, Va., we managed to break away from commencement exercises long enough to pay a visit to Lake Kilby, situated about a mile from the center of town. Then, as now, the lake furnished the water supply for the cities of Suffolk and Portsmouth, but at that time a large number of pleasure boats were kept on it, and no permit was necessary to fish or enjoy an outing on its placid but juniper stained waters. My brother had visited the lake a few days previous to my arrival and found that both the Parula Warbler (*Compothlypis americana*) and the Green-crested Flycatcher (*Empidonax virescens*) had established themselves in large colonies on the lake, with nests completed. We arrived at the pump house about 8 A. M. and after securing a small double-ended bateau with paddles, pushed off. The lake, which is quite deep, is surrounded by high ground, while along the edges and growing in the water near the shore are juniper trees, which at that time were festooned with the beautiful long hanging Spanish moss. A few trees, mostly with dead tops, and stumps, were scattered here and there over the surface, the latter well filled with nests of the House Wren, Bluebird, Yellow-shafted Flicker, Great-crested Flycatcher, Tufted Titmouse, and Prothonotary Warbler.

¹ Birds of America, I, 1840, 115.

² Auk, VIII, 1891, 55, 56.

These species had no charm for us that day for as our boat skirted the fringe of trees near shore, nearly every lower branch contained one or more nests of the Acadian Flycatcher and Parula Warbler, sometimes two or more nests of each species in one tree. The general run though was a nest of the warbler in the long Spanish moss near the extremity of the limb, while further in toward the trunk and on a small crotch, was that of the flycatcher. We never had to climb the trees for any, there were plenty within reach from the boat, nor did we examine more than a small portion of the lower end of the lake before we had a sufficiently large series of both species.

I should have mentioned before that Suffolk and Lake Kilby lie on the outskirts of the famous Dismal Swamp, the juniper trees in both places discoloring the water to a reddish brown, and all of the trees festooned formerly with the beautiful Spanish moss. The juniper water causes a total lack of water-fowl or shore birds.

In 1895, about May 28, my father and brother paddled from Suffolk down the little canal to Lake Drummond, in the heart of the Dismal Swamp, but found the above species sparingly distributed, and with either well incubated sets of eggs or young. I gave this section little thought until the season of 1909, when I suggested to my friend and local bird crank, J. E. Gould of Norfolk, that we take in once more Lake Kilby, promising him sights to open his eyes—for such they were in days of yore. After some little delay and red tape in securing a permit, thanks for which are due to Mr. Gould, we started for Suffolk on the first train the last day of May. Delay in schedule time of arrival of train landed us in Suffolk about nine A. M., while another fifteen or twenty minutes were consumed while walking to the lake. What a change a lapse of sixteen years had wrought. A new and handsome pump house with filtering tank buildings surrounded by well kept lawns greeted us at the old dam, but greater changes were yet in store for me. After changing our clothes for egg collector's regimentals and securing the still used old-time double-ended bateau, we made haste to make up for lost time. We commenced at the lower end with a systematic search of the trees in the lake and those bordering it. We had n't gone many turns of its broken shore line before it became apparent to me that it was "Happy days gone by," and while the same trees were still there, also many of the old stumps, the Spanish moss as well as the birds were lacking, almost a total absence of 'virescens' and 'americana.' Though we worked the whole shore line thoroughly, and special attention was given the heads of the ravines where the moss used to be thickest, only about a dozen trees had any moss on them. The total count of nests were—'virescens,' two, one just finished, the other a set of two eggs; 'americana,' six, four nests just completed, a set of two, and one set of three eggs. We ate our lunch in disgust, for the single pair of Prothonotary Warblers seen had also baffled our prying eyes. This year I again resolved to visit the lake, but at a later date, hoping against hope things would be changed. I spent the

night of June 4 in Suffolk and the next morning reached the lake about six A. M. It had rained heavily during the night and the clouds were still black and threatening, and hardly had I pushed off from the pump house landing before rain came down in torrents. Making the best of a bad job, I again thoroughly worked the whole lake and its tributaries with the following result: Two full sets of three eggs of 'virescens,' and two sets, three each, of 'americana.' The moss is becoming more scarce each year on the trees, the cause for which I cannot account, and whether or not it is lack of building sites and material, or lack of insect food found in the moss that keeps the birds away I cannot say. In 1893 there must have been at least four or five hundred pairs of each; where have they gone? Have they followed the moss? I hear that the junipers in the Chickahominy Swamp are still festooned with this moss. I hope next season to investigate that locality for evidence of these birds. The nests of 'americana' are located in the center of a clump of hanging moss, composed of moss and lined with a little yellow or orange plant down. They are extremely hard to locate unless the bunch of moss is placed between you and the sky line, when a dark clump or spot reveals its presence.

The nest of 'virescens', composed of moss only, is always located on the crotch of a limb, in a slight depression. The shrill whistle of the birds soon disclose their whereabouts, and by watching them a few moments one can locate the nest, as they invariably fly over it or to it.—H. H. BAILEY, *Newport News, Va.*

An Albinistic White-throated Sparrow.—The spring migration of this year brought to Mt. Vernon, Iowa, an albinistic specimen of striking appearance and possibly rather more than usual interest. On Monday, April 25, a bird-lover of the town reported to me over the telephone "a large sparrow with a pure white head," the same having appeared on her grounds the day before. I found it to be a White-throated Sparrow (*Zonotrichia albicollis*) among many of its own species. The whole head and neck were white, with the exception of the yellow lores and a small black patch on the crown not larger than a grain of rice. The boundary line between the snowy white of the head and neck and the quite normal markings of all the other areas was regular and abrupt. The iris appeared normal. Although so conspicuously distinguished from its fellows the albino showed no peculiarities in conduct. With others of its flock it came under the windows for scattered seeds, where it fed without suspicion and during five days was frequently observed at a distance of four feet. The bird could not be collected without offense and presumably left with the bulk of the first wave of White-throated Sparrows during the night following April 28.—CHARLES R. KEYES, *Mount Vernon, Iowa.*

Supposed Nesting of the Pine-woods and Bachman's Sparrows in Chatham County, Georgia.—On the third of June, 1910, while collecting in the northern part of the county I heard a note that was unfamiliar

to me, but on securing the bird found it to be a Bachman's Sparrow. It was a female with two eggs at least of the litter still to be laid. Mentioning the fact to Mr. Frank N. Irving, he said that he had noticed the same difference in the song of some birds that he was watching. From the difference in song I at once supposed that we had found Bachman's Sparrow breeding here and told Mr. Irving that if he found the nest it would be an arched one. The following Sunday he secured not only the nest but both the parent birds. This nest and another open nest, which must undoubtedly be the Pine-woods', have been carefully photographed and the close similarity of the surroundings shown. The two locations are not much over a hundred yards apart.

The pair of birds taken by Mr. Irving were submitted for examination to the Biological Survey in Washington and found not to differ in plumage from type specimens of the Pine-woods Sparrow, which did not astonish us here, as we find much difficulty in distinguishing the two among the specimens that we take here. Of the dozen or so *Pucæas* that pass through my hands yearly it seems as if the winter specimens oftenest approach the Bachman type as described by Ridgway. Coues seems to be mixed on the subject but I have not his 'Key' at hand to refer to.

Now the problem before us is whether there are two *Pucæas* or one nesting here. If one, why should it ever build an arched nest, and why, when it does build an arched nest, does it sing a different song? Unfortunately I was so busily occupied during most of the nesting season this year that I did not get a fair chance to settle the question beyond doubt, but desire to make these observations public now so that we may not lose credit for the discovery, as I did for my Bachman's and Swainson's Warblers.

In this connection let me also mention that I found the Savannah Sparrow nesting at Tybee this year. It seems to have been found by Alexander Wilson in approximately the same locality about a hundred years ago.—W. J. HOXIE, *Savannah, Ga.*

Nesting of *Passerherbulus henslowi henslowi* on Grosse Isle, Michigan.—Since May, 1907, I have observed on nearly every trip afield a small colony of four or five pairs of Henslow's Sparrows in a field in the central part of the island. This field has been allowed to grow up into a dense tangle of goldenrod, asters, pigweed, and other weed growth. Here during May and June I can always hear the very characteristic *se-slich*' calls of the males that are generally perched on some tall swaying weed-stalk. I never gave the time to make a careful search for the nests, but on May 31, 1909, I accidentally found one. I was passing through the lowest part of the field where it borders a woodland, and is generally rather wet. Here I flushed a Henslow's Sparrow from almost beneath my feet, and a short search revealed the nest. This was well screened by a bunch of grasses, sunk in a slight depression, and was composed of fine grasses, and contained four eggs. I withdrew to a short distance to await the

return of the female, and I must admit that it was with some difficulty that I was able to discover the nest again, so well was it hidden. The female again hurriedly flushed which helped me out from further search. In late summer and early fall it is a tedious matter to make these little mouse-like sparrows flush, and once put up they pitch down into the grass apparently only a short distance away, and evidently worm their way through the tangled grass to a distant part of the field. In 1905 I saw the first bird April 30, and the last Oct. 1; in 1904 the last was secured Oct. 2. In 1906 I noted the first May 6; in 1908, May 6; and in 1909, May 12. — B. H. SWALES, *Grosse Isle, Mich.*

The Impaling Instinct in Shrikes.— The shrike habit of impaling its prey on thorns is mentioned in nearly every book on birds, but the greatest diversity exists as to the reason given for the habit, some maintaining that it is done out of an innate love of torture, others, to lure other victims, still others, that it serves only as a fork to hold the prey, while most seem to agree with Audubon that it is "quite a mystery."

As I can find, in the literature at my disposal, only three references to its returning to feed on its victim (Condor, IV, also quoted in Bailey's 'Handbook of the Birds of the Western United States'; Bull. 9, U. S. Dept. of Agric., Div. of Biol. Sur.; and Knight's statement in 'Birds of Maine' that "sometimes they do" return), it seemed desirable to put the following observation on record.

The shrike (*Lanius ludovicianus excubitorides*) in the vicinity of Albuquerque, New Mexico, feeds, during the late fall and winter, quite frequently on the lizards (*Uta stansburiana* and *Holbrookia maculata*) which usually are about in some numbers during the warmer hours of an average winter day. These the shrike impales on thorns, etc., according to its usual custom with small birds and grasshoppers. But the month of December, 1909, was unusually cold and the lizards did not appear.

While riding over the mesa early in January I both saw and heard a shrike perched on a desert willow (*Chilopsis*) feeding on some dry hard substance. Examination showed that the food was the extremely dry bodies of some lizards that had all the appearance of having been placed there several weeks before. The ground about was strewn with fragments and there were still many on the thorn-like branches of the *Chilopsis*. It was the noise the bird made in his attempt to break up this material that first attracted my attention. It is well to observe that in our dry atmosphere such an impaled animal does not decay as it would in a more humid climate but cures perfectly. In fact the native people regularly dry pieces of meat for future use by fastening it to the clothes-line where it is exposed to the almost tropical sun and desert wind.— J. R. WATSON, *University of New Mexico.*

Petrochelidon fulva pallida in Texas.— Among a number of skins collected at Kerrville, Texas, by Mr. Isadore Prions which I recently received

were a male Cliff Swallow taken April 23, and a female taken April 24, 1910, which I identified as this species. Mr. Oberholser, who has kindly examined them, agrees with me. This adds another species to our Check-List.—LOUIS B. BISHOP, *New Haven, Conn.*

The Bank Swallow at Savannah, Georgia.—On September 3, 1910, a Bank Swallow (*Riparia riparia*) was brought to me by Mr. Cord. Assendorf, Jr. As this is, so far as I know, the first record for the species in this locality it may be worth recording.—W. J. HOXIE, *Savannah, Ga.*

The Mockingbird near Boston.—In 'The Auk' for October, 1909, I recorded the breeding of a pair of Mockingbirds (*Mimus polyglottos*) in West Roxbury, Mass., last year. I have recently learned that a pair of these birds bred at Roslindale, about a mile and a half from this locality, in the spring of 1902. My informant is Mrs. Seriah Stevens of Roslindale, who published an account of the nesting in 'Zion's Herald,' a Boston Methodist weekly, for March 3, 1909. Mrs. Stevens assures me that the account there given is entirely true except as to the location of the nest, which was not on her own grounds, as stated for literary purposes, but elsewhere in the neighborhood. Four young were hatched, but when they were about half grown the mother bird was found dead near the nest. The male, however, brought up the brood and launched them from the nest. The father bird and two of the young were seen together near their old home as late as August of that year, but then disappeared and have not been seen there since. The male bird was the one recorded by me in 'The Auk' for July, 1902 (Vol. XIX, p. 292), as having been observed by me on March 23 of that year, and this is the reported unsuccessful nesting referred to in my note of last October.

In this connection I wish to report that the male which bred near my house last year remained in the neighborhood all the autumn and winter and began singing March 21 of this year, the exact anniversary of the beginning of his song the year before. He sang finely and imitated the notes of many birds not due to arrive here for a month or two later. In fact, he introduced imitations which I had not heard from him last year, exhibiting what seemed a remarkable memory for bird-notes. He sang every morning near the house for four weeks, but his mate never arrived and after April 19 he gave it up. I saw him once or twice afterwards and heard of him a few other times, but since about the middle of May he seems to have disappeared entirely. Another Mockingbird was seen in the Arnold Arboretum, about two miles and a half away, in winter and early spring by several observers. He sang freely in April but not very well and seemed not to imitate the notes of other birds. He was believed to be a young bird and very possibly was one of the brood raised by my pair. This bird also disappeared without having found a mate: All this goes to support the view held by Mr. Brewster (*Birds of the Cambridge Region*, pp. 62-64), that birds breeding beyond their normal

range are unlikely to found permanent colonies of regular summer residents.
— FRANCIS H. ALLEN, *West Roxbury, Mass.*

The Wood Thrush in Newbury, Vermont.— Newbury, Orange County, Vermont, is on the west bank of the Connecticut River, Newbury village being about 5 miles south of Wells River, which also is a part of the town of Newbury. From the meadows along the river, the land rises to a high bluff on which the village is situated, then still higher to the top of Mt. Pulaski, which is nearly a thousand feet above the sea. The house where I am spending the summer is among a growth of tall pines, spruces, oaks, birches, etc., at the foot of Pulaski slope. Before 7 A. M. July 4, 1910, many birds were singing about the house, among them the Hermit and Wilson's Thrush and White-throated Sparrow, when to my surprise I heard the Wood Thrush, which I had never heard in Vermont before. He sang four times; a day or so later, I saw a Wood Thrush.— ANNA E. COBB, *Providence, R. I.*

The Hermit Thrush Breeding in Litchfield County, Connecticut.— On July 23, 1910, I found a nest of a Hermit Thrush near the top of Bear Mountain, Litchfield County, Connecticut. The nest was about a half mile south of the Massachusetts line, and two or three miles east of the New York line, and at an altitude of about 2300 feet. The bird was flushed from the nest by a companion who was walking with me, and I had only a momentary glimpse of it as it flew away. Although I remained in the vicinity of the nest for quite a long time, the bird did not return, but the glimpse that I had was sufficient to show that it was neither a Wood Thrush nor a Wilson's Thrush. The locality and construction of the nest, and the size and color of the eggs, seem to conclusively establish that of the remaining possible thrushes, the bird must have been a Hermit Thrush. Dr. Louis B. Bishop, of New Haven, Conn., agrees with this identification, and tells me that it is the second record for Connecticut.

The nest was placed on a broad flat rock, under the shelter of a blueberry bush, and was embedded in gray moss. The nest was deeply cupped, and very neat. It was built externally of small sticks, most of them rotten and pulverized; the next layer was of grasses and fine twigs, with a good deal of green moss, and a few leaves, which, however, were not at all conspicuous, the moss being worked up around the edge of the nest, so that the general outer appearance of the nest was chiefly green. The nest was lined entirely, and very neatly, with long pine needles.

There were two fresh eggs in the nest, which measured $.63 \times .83$ inches. They were a pale blue. Upon comparison with my series of eggs, I find that the blue is somewhat darker than that of a Bluebird, but fully as light as either a Robin's or a Wood Thrush's. Compared with the eggs of the Wilson's Thrush, the eggs are strikingly blue, and without any pronounced greenish tinge.— LOUIS H. PORTER, *Stanford, Conn.*

Notes from Grosse Isle, Michigan.—*Lophodytes cucullatus*. On July 5, 1909, James H. Fleming, P. A. Taverner, and I noticed a bird swimming in the Detroit River just outside of the strip of marsh below my place on the island which we took to be a grebe. Upon investigation we saw that it was a duck of some species, and Taverner took a canoe and secured it. It was a juvenile male Hooded Merganser in good condition but with a healed broken wing which accounted for its presence here at this time.

Dendroica discolor.—I saw at very close range, on Sept. 30, 1909, a Prairie Warbler on the edge of a low strip of woodland in the central section of Grosse Isle. The bird approached within about fifteen feet of me, and I could clearly make out the yellowish wing bars, the yellow superciliary stripe, and streaked sides. This bird was lingering somewhat later than it generally does in other localities. I am aware of no other county record in autumn. At Point Pelee, Ont., however, we have taken it Sept. 5, 1905, and August 15, 1908, and Saunders and Taverner have seen and heard birds that they were positive were this species on Sept. 6, 1905, and Sept. 20, 1906.—B. H. SWALES, *Grosse Isle, Mich.*

Notes from Connecticut.—As it will be at least a year before the 'List of the Birds of Connecticut' on which Mr. Sage and I have been at work can be ready for the press I have felt the following records were of enough interest to be recorded in 'The Auk.'

Fulmarus glacialis. FULMAR.—A male was shot off Stony Creek by Mr. A. H. Verrill on October 10, 1909, and brought to Dr. L. C. Sanford in the flesh. The latter showed it to me on October 12, just after he had finished making it into a skin. This is the first record for Connecticut, and it is remarkable that so pelagic a species should have wandered to Long Island Sound.

Somateria dresseri. AMERICAN EIDER.—Young King Eiders (*Somateria spectabilis*) often occur in late fall on the Connecticut coast, but the only record for the present species that I know of since 1877 (Merriam, Trans. Conn. Acad., IV, 1877, p. 127) is that of a young male which Mr. Alanson Ganung shot off West Haven on December 20, 1909, and very kindly gave me in the flesh.

Limosa fedoa. MARBLED GODWIT.—On August 26, 1909, Mr. William Ganung shot in West Haven an adult female Marbled Godwit and a young Western Willet (*Catoptrophorus semipalmatus inornatus*), and his brother, Alanson, brought them to me. Western Willets are by no means common, and this is the first occurrence of the Marbled Godwit, so far as I know, since Linsley's record (Am. Jour. Sci., XLIV, 1843, p. 267).

Aquila chrysaetos. GOLDEN EAGLE.—A young bird of this species was shot in East Haven on October 9, 1909, and brought to Dr. Sanford in the flesh.

Haliaeetus leucocephalus alascanus. NORTHERN BALD EAGLE.—A young female Bald Eagle, which was shot near Willimantic on October

27, 1909, by Mr. G. H. Champlin, I obtained in the flesh through the kindness of Mr. C. R. Hooker. This bird (length, 36.19, extent, 89, wing, 23.88, tail, 14.62, and exposed culmen, 2.52 inches) is so much nearer Bald Eagles from Alaska and British Columbia than to those from Virginia and Florida that I have referred it to *alascanus*.

In this connection I wish to correct my record of a Gray Sea Eagle (*Haliaeetus albicilla*) from British Columbia (Auk, XXII, 1905, p. 79), as I now believe, after a study of about forty of the two species in the collections of the American Museum of Natural History, Dr. Dwight and myself, that that eagle is merely a young *H. l. alascanus* in faded plumage. This Connecticut bird resembles even more closely young *H. albicilla* than does the British Columbia one, differing from it only in having the feathers of the nape and hind-neck longer and more lanceolate and the dark terminal markings of the scapulars and interscapulars more sharply defined.

Scotiaptex nebulosa. GREAT GRAY OWL.—Dr. Sanford showed me on April 13, 1907, a freshly mounted Great Gray Owl, the toes of which were still flexible, which he had just purchased at a restaurant in New Haven. This bird evidently had been recently killed, and Dr. Sanford was assured it was shot in East Haven the last of March. I know of no other certain record since Linsley (Am. Jour. Sci., XLIV, 1843, p. 253).

Acanthis hornemanni exilipes. HOARY REDPOLL.—Although Redpolls (*Acanthis linaria*) were formerly occasionally common in southern Connecticut and more rarely recorded in recent years, not until the fall of 1906 did I ever succeed in finding this species. On November 24 of that year while collecting in East Haven with my friend Mr. E. Seymour Woodruff, whose untimely death was a great and permanent loss both to his friends and to ornithology, we found a large flock of Redpolls and from it were fortunate enough to secure a single young female Hoary Redpoll, now in my collection. This is the first record in Connecticut.

Vermivora leucobronchialis. BREWSTER'S WARBLER.—Although I have collected near New Haven some twenty males of this phase of plumage of *V. pinus*, not until May 23, 1910, did I discover one without trace of yellow on back or lower parts. A rather interesting fact is that while practically all the others had the song of *V. pinus* this bird had that of *V. chrysoptera*, and had the wing bars of the latter.

What I believe is the first young bird to be recorded showing this phase of plumage is a young male which I collected in New Haven on September 12, 1907, in first winter plumage. On this the yellow below is much paler than in typical *H. pinus* and fades into white on the throat and sides of the neck.

Vermivora lawrencei. LAWRENCE'S WARBLER.—On May 20, 1909, I collected an adult male less than two hundred yards from where those recorded in 'The Auk' for 1906, Vol. XXIII, p. 345, were taken. This bird closely resembles that taken May 24, 1906, but the black of the throat is purer. The capture of three males at the same place in different years would tend to show that this phase of plumage is hereditary.

On June 4 of the same year, while collecting with Mr. Herbert K. Job in Woodmont, I obtained another typical male Lawrence's Warbler. After about two hours' search a female Blue-winged Warbler (*V. pinus*) was flushed from a nest containing 4 of her eggs and 2 of the Cowbird (*Molothrus ater*) about thirty feet from the tree where the male Lawrence's was shot. As no others of this genus were noted within a quarter of a mile I have no doubt these birds were mated. The nest, eggs and location were typical of *V. pinus*, as was to be expected. All are now in my collection.—LOUIS B. BISHOP, *New Haven, Conn.*

Seven Erroneous South and North Carolina Records.—In 'The Auk' for July, 1910, pp. 312-322, a list of birds, under the title 'Birds observed in the Carolinas,' is given by Mr. P. B. Philipp, and the following "records" are erroneous and need correction, viz.:

"23. *Rallus crepitans*. Clapper Rail. Very abundant in the extensive salt marshes around Charleston Harbor and Bull's Bay, S. C., where it was seen or heard daily June 10-15. One nest, with four fresh eggs, was taken June 14 on St. James [James] Island, S. C."

These Rails were all *Rallus crepitans waynei*, which is the resident breeding form.

"29. *Numenius longirostris*. Long-billed Curlew; Jack Curlew. A flock of six was seen June 12 on Bird Island Shoal, Bull's Bay, S. C. There is a persistent idea among fishermen and baymen of the region that this species breeds here; we did not find a nest, however, and did not hear of any nest ever being found."

The birds "seen" by Mr. Philipp were without doubt examples of *Numenius hudsonicus* which is always present during the entire month of June. *N. longirostris* [= *americanus*] has been extinct on the South Carolina coast for at least ten years — and *never bred*. (See Auk, XXIII, 1906, 59-61.)

"46. *Dryobates villosus*. Hairy Woodpecker. Not common at Lake Ellis, N. C. This species was recorded by Mr. Abbott as occurring in the heavy timber between Ellis and Great Lakes, where it was seen June 18. Another was seen feeding on a dead pine stump near Havelock, N. C., June 16."

Dryobates villosus does not, in my opinion, range as far south on the North Carolina coast as latitude 36° N., the resident breeding form being *Dryobates villosus auduboni*.

"67. *Pipilo erythrophthalmus*. Towhee. Common among the Sea Islands, S. C. Particularly noted June 15 on St. James [James] Island, where a pair with a brood of young were seen."

The resident breeding form is *Pipilo erythrophthalmus alleni*.

"72. *Riparia riparia*. Bank Swallow. Uncommon and unusual during the summer in the Sea Islands, S. C. Two were seen by Mr. Abbott on St. James [James] Island, June 15."

The birds recorded by Mr. Philipp, as well as those "seen" by Mr.

Abbott, were representatives of the Rough-winged Swallow (*Stelgidopteryx serripennis*).

"85. *Geothlypis trichas*. Maryland Yellow-throat. Common among the Sea Islands and on Raccoon Key[s], Bull's Bay, S. C., where it was seen June 12-15."

The resident breeding form is *Geothlypis trichas ignota*, and all birds "seen" were of this race.

"91. *Telmatodytes palustris*. Long-billed Marsh Wren. A Marsh Wren was very common in the marshes around Bull's Bay, S. C., and the rookeries on Secessionville and St. James [James] Island. Seen and heard June 10, 11, and 15. None was collected, and the form is doubtful. No nests were found and no young seen."

The form is by no means "doubtful," for they were all representatives of *Telmatodytes palustris griseus*.

It is indeed remarkable that the birds mentioned by Mr. Philipp, during five days spent on the South Carolina coast, and as merely having been "seen," should have escaped my notice during more than forty-seven years spent in and about Charleston.

In his account of 'Bird Photographing in the Carolinas' (Auk, XXVII, July, 1910, 305), Mr. B. S. Bowdish says: "As we passed out from the dock [Charleston] we took several memento views of the water-front, the customhouse, and a lighthouse relief ship. Further down the bay we caught snaps of historic old Fort Sumter where was fired the first gun in the Civil War, and a little further out met a torpedo boat destroyer coming in." In order that history may not be perverted I will state that the "first gun" in the great Civil War was fired on January 9, 1861, from the battery on Morris Island occupied by Citadel cadets under command of the late Bishop (Maj.) P. F. Stevens, and was directed at the 'Star of the West,' a United States steamer that was trying to enter Charleston Harbor to re-inforce Fort Sumter, commanded by Maj. Robert Anderson.

More errors could be corrected in Mr. Philipp's list, but these are mostly minor errors.—ARTHUR T. WAYNE, Mount Pleasant, S. C.

RECENT LITERATURE.

The A. O. U. Check-List of North American Birds. Third Edition.¹—The third edition of the A. O. U. Check-List was authorized at the stated meeting of the Union held in November, 1905, when also a committee was appointed to consider the A. O. U. Code of Nomenclature, and report what changes in the Code, if any, seemed necessary to better adapt it to present day needs. The Code committee later recommended a number of modifications, mainly in the nature of amplification and explicitness of statement. The chief modification was the adoption *en bloc* of Rule 30 of the International Code of Zoölogical Nomenclature, as revised at the Seventh Congress held at Boston in 1907, in relation to the determination of types of genera. This rule was virtually the same in effect as the rules on this subject in the original A. O. U. Code of 1886, and hence served to confirm the type designations of the first and second editions of the Check-List, with only the two or three exceptions subject to a special provision. As a result of the committee's work, a revised edition of the Code was published in July, 1908.

The committee in charge of the preparation of the new edition of the Check-List devoted nearly four years to the work, notwithstanding the labor was divided among several subcommittees, to whom great assistance was rendered by other members of the Union. Every detail of nomenclature, the verification of references, and the geographical distribution of the species and subspecies received the most thorough consideration, the time and labor expended on this new edition probably greatly exceeding that given to the preparation of both the preceding editions and their supplements.

The new edition differs from previous editions in several important particulars, both typographically and otherwise, as follows:

- (1) Subspecies are distinguished from species by having all the matter relating to them printed in smaller type than that pertaining to species.
- (2) In the case of composite or polytypic species, the range of the group as a whole is briefly given, under the name of the species, which serves as a caption for the group, the North American subspecies of the group following in due sequence, with their respective ranges stated in detail. In

¹ Check-List of North American Birds Prepared by a Committee of the American Ornithologists' Union Third edition (revised) — Zoölogical Nomenclature is a means, not an end, of Zoölogical Science — New York American Ornithologist's Union 1910 — 8vo, pp. 1-430, and 2 maps of North America, one colored, to show the life zones, the other plain, giving localities. August, 1910. \$2.50.

American Ornithologists' Union Abridged Check-List of North American Birds — From the Third Edition — New York American Ornithologists' Union 1910 — Pocket Edition, 3½ by 6 inches, pp. 77, printed only on the right hand page. August, 1910. 25 cents; 10 copies, \$2.00.

these the general range is first indicated, then the breeding range and the winter range, and finally the localities of its casual or accidental occurrence.

(3) The species are not numbered, and subspecies are designated by letters. The numeration of the previous editions is given at the right of the English name, in brackets, as a concordance. The old enumeration is thus available for use.

(4) The concordance to previous Check-Lists (those of Baird, Coues, and Ridgway) is omitted.

(5) The secondary references under species and subspecies are also omitted, only the reference to the place of original description being given.

(6) This reference is followed by a statement (in parenthesis) of the type locality of the species or subspecies, usually as given by the original author, but in many cases in more definite and exact terms.

(7) The type species of each genus and subgenus is not only given as before, but the manner in which it came to be the type is also stated, this being an item of information of the utmost interest to the nomenclator.

(8) The generic and specific names are marked for accent.

(9) Two maps are included, the first, bound in as a frontispiece, is printed in color to show the life zones of North America; the other, uncolored, and placed at the beginning of the systematic list, gives the localities especially mentioned in the Check-List, particularly type localities and others zoologically of historic interest, many of which are not indicated on modern maps.

(10) A further departure from previous editions is the elimination of all the species resting solely on the unconfirmed records of Giraud's 'Birds of Texas,' and of a few others included on early unsatisfactory records still unconfirmed, and which, in the light of present knowledge, seem highly improbable.

The geographical boundaries of the Check-List remain as heretofore, that is, they include Greenland and the peninsula of Lower California. The classification is also unchanged — a feature that may evoke more or less criticism in certain quarters. The preface, however, thus states the case: "It was at first the intention of the Committee to modernize the sequence of the groups. The fact, however, that the present systems of classification in ornithology are admittedly tentative, and differ widely among themselves, it seemed best, from the standpoint of convenience, to continue the old Check-List system unchanged, since the users of the Check-List are familiar with the present order of arrangement and would regret the annoyance that a radical change from it would cause. In deference to this known widespread preference, the old order of arrangement has been continued." Preference is expressed, however, for the well known Gadow system, with modifications, an abstract of which system is given, with the Check-List equivalents added in brackets.

For a similar reason it was decided to refrain from giving a new consecutive numbering to the species, since it would necessarily differ widely from that of previous editions, owing to the interpolation of thirty-four

species and the elimination of a considerable number of others since the publication of the first edition twenty-four years ago.

The first edition of the American Ornithologists' Union Check-List of North American birds (1886) contained 768 species, serially numbered, and 183 subspecies, indicated by the letters *a*, *b*, *c*, etc., placed after the species number, which was repeated for each subspecies. The number of forms recognized was 951. Of this number 82 species were indicated (by the species number being inclosed in brackets) as of merely casual or accidental occurrence, leaving only 869 forms that were to be regarded as properly North American birds.

The second edition (1895), published nine years after the first, contained 799 species and 269 subspecies, making a total of 1,068 forms, a net gain of 31 species and 86 subspecies, or 117 forms.

The third edition (August, 1910), appearing fifteen years after the second, contains 802 species and 394 subspecies — a total of 1,196 forms (1,200 in round numbers). This is a net gain over the second edition of 3 species and 125 subspecies.

A comparison of the third edition with the first shows that in the twenty-four year interval the net gain has been 34 species and 211 subspecies. Many more than these numbers have been added, but a large number of species and subspecies have also been eliminated. Thus in the second edition, while 38 species and 83 subspecies were added, 7 species and 3 subspecies included in the first edition were either eliminated or changed in status. In the third edition, there were numerous changes of a similar character.

It is difficult to summarize all of the varied and numerous changes in respect to species and subspecies that have been made in the gradual evolution of the Check-List from the first edition to the third. An approximate analysis is attempted in the following table, with a deep consciousness of the liability of there being in it a small percentage of error.

First Edition.

Number of species	768
“ “ subspecies	183
Total number of forms	951

Second Edition.

Number of species	799
“ “ subspecies	269
Total number of forms	1068
Species omitted	7
“ added	38
“ net increase	31
Subspecies added	90
“ omitted	4
“ net increase	86

Third Edition.

Number of species	802
" " subspecies	394
Total number of forms	1196
Species omitted	20
" added	23
" net increase	3
Subspecies added	148
" omitted	14
" raised to species	4
" net gain	130

General Summary.

Total net increase, species	34
" " " subspecies	211
Total species added	83
Species removed (as synonyms, 5; as extralimital, 15; as hybrids, 3)	23
Species reduced to subspecies	26
Total subspecies added	247
Subspecies raised to species	5
" reduced to synonyms	31
Total species of casual or accidental occurrence (numbers in brackets)	119
Brackets removed from	17
Bracketed species eliminated	14
" " remaining in 3d ed.	88

The most obtrusive changes, as well as the most unwelcome, in the several editions of the Check-List, are those of nomenclature. They are due to a better understanding of the status and relations of the elements that enter into the Check-list, from subspecies to families, due to increase of material and more thorough acquaintance with the literature of the subject, and to the strict enforcement of currently accepted rules of nomenclature. These may be tabulated with approximate accuracy as follows:

Family names changed	5
Subfamilies raised to families	10
Subfamily names added	3
Generic names changed	60
Subgenera raised to genera	34
Genera added	8
Subgenera added	8
Specific names changed	52
Subspecific names changed	38

The change of method in the treatment of composite or polytypic species introduced in the third edition has added greatly to the number of trinomial names. In former editions all specific groups which were represented in the Check-List fauna by only a single form were designated by binomial names, the additional subspecies by trinomial. Thus *Uria troille* of former editions is now *Uria troille troille*, to render the name distinctive of the particular form of the group referred to, while the species name stands as a heading or caption for its subspecies as a group, whether, as in other cases, the group consists of two subspecies or more. This method is also applied to composite species represented in the Check-List by a single subspecies, as in the case of *Colymbus nigricollis*, where the earliest-named, or "typical," subspecies is extralimital; but it is not introduced where the group is represented by a single subspecies which happened to be the first-described form of the group,¹ as in cases like *Spinus pinus*, etc. The introduction of this method has increased the number of trinomials over previous editions by the addition of 232. In 65 of these cases the 'type' subspecies is "North American" (in the sense of the Check-List), and in 65 cases extralimital. (In the preceding table, under subspecies, these 232 trinomials are not included.)

Of the 802 species in the third edition, 611 are monotypic and 191 polytypic, as regards their representation in the Check-List. Of the 191 polytypic species, 102 have each only a single additional subspecies, 47 have 2 each, 15 have 3 each, and 27 have 4 or more each. The following have the highest numbers: *Lagopus rupestris*, 6; *Otus asio*, 8; *Dryobates villosus*, 7; *D. pubescens*, 5; *Otocoris alpestris*, 13; *Agelaius phoeniceus*, 7; *Junco hyemalis*, 9; *Melospiza melodia*, 19; *Passerella iliaca*, 7.

The relationships and relative importance of the more than 600 subspecies included in the Check-List is clearly set forth through the use of the trinomial system, since if all the forms which are considered as entitled to a place in the list were given binomial names, as some ornithologists insist is the only satisfactory way of recording them, slightly differentiated intergrading forms, that even the expert finds difficulty in distinguishing, would have the same apparent value as wholly isolated and strongly characterized congeneric species. While it may be difficult for even a committee of experts always to determine with exactness the proper status of certain obscurely differentiated forms, their errors are not likely to be numerous, and are far more than offset by the guidance afforded to the uninitiated in the multitude of other cases that can be determined beyond reasonable doubt. The relatively few changes that have been made in the Check-List in the status of species and subspecies have been mostly in

¹ This is an inconsistency, due perhaps to oversight, as this innovation was not adopted till the first half of the Check-List was already in galley proof. In cases like *Spinus pinus* the name should be *Spinus pinus pinus*, to indicate unequivocally that the form referred to is only the typical race and does not include *Spinus pinus macropterus*; and similarly in all parallel cases.

cases where material for their investigation was in the first instance scanty and later became more adequate.

It is of interest to note that most of the species added to the Check-List since the publication of the first edition have been either waifs and strays from extralimital regions, or insular forms from the Aleutian Islands, or species recently described from the peninsula of Lower California and its contiguous islands. By far the greatest part belong to the category of accidental species pertaining properly to the fauna of Europe and Asia but occurring casually in Greenland and Alaska, or West Indian and Mexican species of casual occurrence within the Check-List limits, and a few that have been found to range slightly beyond the northern border of Mexico. Nearly one-half of these additions are water birds, as petrels (*Tubinares*), ducks and geese (*Lamellirostres*), and shore birds (*Limicolæ*); several others are West Indian pigeons and swallows.

The species of merely casual or accidental occurrence within the Check-List limits (indicated by the enclosure of the number designating them in brackets in the first and second editions, and as bracketed insertions in the third edition) form, owing to their large number, a rather prominent feature of the list, the total (including all the editions) being 119. Of these 88 are still retained, the others proving to have been improperly included. This is only six more than the number contained in the first edition, but the constituency of the bracketed list has been much changed by additions and eliminations. This feature, in fact, serves as an indication of progress in our knowledge of North American birds. Thus it has been found proper to remove the brackets in the case of 17 species given as bracketed species in the first and second editions, these species, though rare, having proved to be of sufficiently frequent occurrence to be regarded as proper elements of the Check-List fauna. At the same time 14 others have been wholly eliminated as being without a satisfactory record of occurrence within the limits of the Check-List, while 28 others have been added on the basis of authentic records of capture.

The Hypothetical List also shows changes of similar character, it numbering 26 species in the first edition, 27 in the second, and 20 in the third, notwithstanding the addition of 5 species in this edition. Of the total of 34 species referred to it, 3 have been transferred to the main list and 11 eliminated as having not even a hypothetical claim to recognition as species of the Check-List area.

The List of Fossil Birds has nearly doubled since the first edition, has been reclassified, and otherwise made more satisfactory and useful. From 46 species in the first edition the list increased to 64 in the second, and to 72 in the third, which comprise all of the known fossil birds of North America to the close of the year 1909.

It would be out of place for the present writer to dilate on the merits of the 'New Check-List,' which will doubtless be welcomed as bringing together in convenient order the numerous additions and nomenclatorial changes previously scattered through eight Check-List Supplements.

In the final revision of the manuscript for the press a few changes were made subsequent to the publication of the last (Fifteenth) supplement, consisting in the addition of one species and one subspecies, the elimination of one or two species and subspecies (among others the Harpy Eagle), the reduction of one species to a subspecies, and one change of nomenclature.¹

A word should be said, however, in reference to the revision of the ranges of the species and subspecies. This has entailed a vast amount of original research, not contemplated by the committee at the beginning of its work, the revision having for its basis not only all published records but the data collected during the last twenty-five years by the Bureau of Biological Survey, for the most part unpublished. The committee, and all who may make use of the Check-List, owe an immense debt of gratitude to the Chief of the Survey and his assistants for the vast amount of labor they have expended in perfecting this important feature of the Check-List, and for use of the map showing the life zones of North America, revised to date.—J. A. A.

Wayne's 'Birds of South Carolina.'²—Through thirty years of almost continuous observation in the vicinity of Charleston, the author of the present work has acquired a knowledge of the ornithology of the coast region of South Carolina that makes the field peculiarly his own. Notes from his pen regarding the birds of this region have appeared in 'The Auk' and other ornithological journals with increasing frequency since about 1886, adding some thirty species to the known avifauna of South Carolina, correcting numerous erroneous records for the State, and greatly increasing our knowledge of the life histories of many of the rarer species. Mr. Wayne began serious work in ornithology at the time of Mr. William Brewster's visits to the vicinity of Charleston in 1883, 1884, and 1885, where they together rediscovered Swainson's Warbler, and made known its nest and eggs and breeding habits. As their relations have since been more or less intimate it is very appropriate that the present volume should be dedicated to Mr. Brewster.

The author tells us that his original plan was to treat only the birds of the coast region, but through the solicitation of ornithological friends he has added "an annotated list of additional species of the Piedmont and Alpine regions, not found in the coast region." The book relates mainly,

¹ Added: (1) *Falco tinnunculus*, (2) *Tangavivus aeneus aeneus*; added to Hypothetical List: (1) *Anas rubripes tristis*, (2) *Pisobia ruficollis*. Omitted: (1) *Sterna fuscata crissalis*, (2) *Ægialitis meloda circumcincta*, (3) *Thrasaëtos harpyia*, (4) *Colaptes chrysoides brunnescens*. Reduced to subspecies: (1) *Macrorhamphus scolopaceus*. Changes in nomenclature: *Falco dominicensis* changed to *Falco sparveriioides*, as in first edition.

² Contributions from the Charleston Museum | Edited by Paul M. Rea, Director | I | Birds | of | South Carolina | By Arthur Trezevant Wayne | Honorary Curator of Birds in the Charleston Museum | With an Introduction by the Editor |—| Charleston, S. C. | 1910—8vo, pp. xxi + 254. Paper, \$2.75; cloth, \$3.25.

therefore, to the coast districts, the author's special field of research, only ten pages being given to a consideration of birds peculiar to the more elevated interior parts of the State.

The introduction, prepared by Prof. Paul M. Rea, at the request of the author, who was prevented from writing it by prolonged illness, treats of the 'Physical Divisions of South Carolina,' and the 'History of Ornithology in South Carolina' (pp. xi-xxi). The latter begins with the early explorations of the middle of the seventeenth century and to the time of Catesby, whose well known work, 'The Natural History of South Carolina, Florida, and the Bahama Islands,' was published in London, 1731-1748. Aside from a slight contribution by Bartram, in 1791, little was added to the history of the birds of the State till the appearance of Audubon's 'Birds of America' and 'Ornithological Biography,' 1831-1839, who, with the assistance of Bachman, made the vicinity of Charleston "a classic field in American ornithology." Compared with the ornithological methods of the present day, their work was naturally superficial and to some extent inaccurate in statement, which faults are corrected in the present work in rigid detail. Later Mr. L. M. Loomis worked with great care and thoroughness, from 1876 to 1892; in the vicinity of Chester in the interior, while within this interval Mr. Brewster published the results of his visits in 1883-1885 to the Charleston region, and Mr. Walter Hoxie (1886-1892) published notes on various birds observed near Frogmore. Mr. Wayne, however, has been our chief contributor to the ornithology of eastern South Carolina. It is therefore exceedingly fortunate that the results of his work are now made available in a connected and permanent form.

The number of species here recorded for the coast region is 309, with a supplemental list of 28 species from the interior of the State, and a 'Hypothetical List' of 22 species, many of which will doubtless be later found to occasionally visit portions of the State. There are late (mostly 1910) records and notes relating to 12 species in 'addenda,' and the work closes with a bibliography of South Carolina ornithology numbering about 200 titles, and a very full index.

As to the form of the book, it is not a 'manual,' since it gives no descriptions or keys of the birds recorded, the text relating wholly to the manner of occurrence of the species, but there are many extended references to habits, and descriptions of nests and eggs, based on the personal experience of the author. It thus abounds in fresh information concerning the life histories of South Carolina birds. Mr. Wayne's long experience and great familiarity with the region about Charleston seems to have inspired him with great confidence in the completeness of his researches, and that what has not come to his personal knowledge in relation to the birds of the coast region is not likely to be true. In other words, his attitude of censorship of what has been recorded by others is perhaps in some instance too severe. A record may sometimes be accepted, if not entirely improbable, when it is not backed up by a specimen in proof of it. But on the whole

his conservatism in such matters is admirable, and has resulted in a solid foundation for the addition of future increments to our knowledge of South Carolina birds.—J. A. A.

Scott's Ornithology of Patagonia. Part II.—We have recently received Part II of the volume devoted to Ornithology in the Reports of the Princeton University Expeditions to Patagonia, 1896–1899,¹ issued March 3, 1910. Part I (pp. 1–112) was issued in 1904, the long interval between the publication of Parts I and II being due mainly to Mr. Scott's long continued ill health.² As part I was noticed at some length in this journal (Vol. XXII, Jan., 1905, pp. 96, 97), in which the origin and general character of the work was fully stated, it is sufficient to say that Part II conforms to the standard established in Part I, and deals with the families Procellariidæ, Laridæ, Stercorariidæ, Chionididæ, Thinocorythidæ, and Charadriidæ" (= Hæmatopodidæ, Aphrizidæ, Charadriidæ, Scolopacidæ). The nomenclature and classification are naturally the same as in Sharpe's 'Handlist of Birds.' As in Part I, the bibliographic citations are very full down to about 1902, but we miss references to the reports of the later Antarctic expeditions, as the Scotch, French, German and Swedish, published from about 1904 to 1908, and to Godman's recent 'Monograph of the Petrels.' References are made, however, to a few important works and papers published as late as 1909, and others in 1907.

The illustrations are mainly text figures of heads, feet, wings, tails, etc., but comprise about a dozen full-length figures, drawn by H. Grönvold, and mostly printed as uncolored full-page plates, numbered consecutively with the text illustrations as figures.

The work forms an exceedingly useful compendium of Patagonian ornithology, and we hope that the manuscript was left by the author in such shape that its completion will be only a matter of time.—J. A. A.

A Biography of William MacGillivray.³—The personality of William MacGillivray is of special interest to American ornithologists through his

¹ J. Pierpont Morgan Publication Fund | — | Reports of | The Princeton University Expeditions | to Patagonia, 1896–1899 | J. B. Hatcher, in Charge | Edited by | William B. Scott | Blair Professor of Geology and Palæontology, Princeton University | Volume II — Ornithology | Part II. | Procellariidæ — Charadriidæ | By | William Earl Dodge Scott | Princeton University | associated with | R. Bowdler Sharpe | British Museum of Natural History | Princeton, N. J. | The University | Stuttgart | E. Schweizerbartsche Verlangshandlung (E. Nögele) | 1910 — 4to, pp. 113–344, fig. 67–174. "Issued March 3, 1910."

² Mr. Scott, we regret to announce, died August 23, 1910. (See below, p. 486.)

³ Life of | William MacGillivray | M. A., L. L. D., F. R. S. E.; Ornithologist; Professor of | Natural History, Marischal College and | University, Aberdeen | By William MacGillivray, W. S. | Author of "Rob Lindsay and his School," etc. | With a Scientific Appreciation | by J. Arthur Thomson | Regius Professor of Natural History, Aberdeen University | With Illustrations | "In the eye of Nature he has lived." | London | John Murray, Albemarle Street, W. | 1910 — 8vo, pp. xv + 222, and 12 half-tone plates. 10s 6d. net.

association with John James Audubon in the preparation of his great work on the Birds of North America. The story of this relationship has often been told, but never with the fullness and detail here given. As is well known, Audubon was indebted to MacGillivray for his classification and nomenclature, and it is here stated MacGillivray himself wrote the 'Synopsis,' published in 1839.

The author of the present work, a namesake of the great naturalist, says in the introduction: "No detailed biography of Professor MacGillivray has ever been written, and the materials for such do not now exist. From an early period he kept careful journals of his life and work, and from these a biography of great interest and value could have been compiled; but unfortunately all but two volumes were accidentally destroyed by fire in Australia many years ago. I recently discovered that two volumes in MacGillivray's neat and careful handwriting remained in the possession of the family of the late Dr. Paul MacGillivray, an eminent surgeon in Australia, son of the Professor, and having been allowed the privilege of perusing them, . . . I shall make use of them freely in the following narrative." These relate to his residence and travels in the Hebrides, from August 3, 1817, to August 13, 1818, and to a journey in Scotland and England in 1819. Copious extracts are given from these precious volumes in the present work.

William MacGillivray was born in 1796, in Aberdeen, the son of a surgeon in the army, who lost his life at the battle of Corunna in January, 1809, when William was thirteen years old. His boyhood days were spent with relatives on the island of Harris, returning to Aberdeen for his further education when twelve years old, and after finishing his course at King's College began the study of medicine. The fifty-six years of MacGillivray's life are divided in the present narrative into five periods. The first includes his boyhood on the island of Harris; the second, his university life at Aberdeen; the third, the "Edinburgh Period," from his marriage in 1820 to 1831; the fourth, his conservatorship at the Museum of the Edinburgh College of Surgeons (1831-1841), which covers the preparation of the earlier volumes of his 'History of British Birds' and his work with Audubon; the fifth, his professorship in Marischal College and University at Aberdeen (1841-1852). These five chapters form the first 113 pages of the present volume, and are followed by an appreciative chapter on his scientific work (pp. 114-158) by Professor Thomson, of Aberdeen University, and by extracts from MacGillivray's works (pp. 159-214), illustrative of his attainments as an all-round naturalist and his fine traits of character. The text is appropriately illustrated with twelve half-tone plates, eight of which are reproductions of some of MacGillivray's drawings of birds, now in the British Museum; others give a view of King's College, Aberdeen, of the gateway at Marischal College, a winter scene in the Chanoury, Old Aberdeen, where MacGillivray lived for a time, and a facsimile of a letter written by MacGillivray in 1834, now in the collection of Mr. Ruthven Deane, and loaned for use in the present connection.

Although confessedly imperfect and fragmentary, this contribution to our knowledge of MacGillivray, "the greatest and most original ornithologist of his day," will be welcomed as portraying the main features of his life and character — his unusual gifts and endearing personality.— J. A. A.

Penard's Birds of Guiana, Volume II.—As stated in our notice of the first volume (Auk, XXV, Oct., 1908, p. 491), this work¹ is based on first-hand knowledge gained by the authors during a twelve years' residence in Dutch Guiana, and who write of the birds of this interesting country from personal study of them in life. The present volume includes the species from the Toucans to the Thrushes or the Picariæ and Passeres, of which a dozen species are described (some of them tentatively) as new. The general character of the work is stated in our notice of the first volume. We congratulate the authors on the completion of this important contribution to tropical American ornithology, a work which must form a very useful handbook for the residents of Guiana.— J. A. A.

Hartert's 'Die Vögel der paläarktischen Fauna.' Heft VI.²—Part VI carries the work to the end of the Passeres and completes the first volume, for which is issued with this double part a title-page and index. It contains the last half of the author's Muscicapidæ (= Sylviidæ, Timeliidæ, and Turdidæ of authors), the Accentoridæ, Troglodytidæ, and Hirundinidæ, or Nos. 987–1240, beginning with the genus *Turdus*. The table of contents of Volume I occupies pp. xiii–xlix, with which is incorporated as footnotes critical references to the literature bearing on the ornithology of the 'Palearctic Fauna,' from 1903 to the end of the year 1909. These notes deal with questions of synonymy and nomenclature as well as with the status and relationship of the many forms described since the publication of the first five parts of the 'Fauna.' Among the changes of nomenclature are *Acanthis linaria* in place of *A. flammea*; *Muscicapa hypoleuca* (Pallas, 1764) in place of *M. atricapilla*; *Sylvia cantillans* (Pallas, 1764) in place of *S. subalpina*. Many of the recently described forms are accepted, but a much larger number are consigned to synonymy. Nearly a dozen new subspecies are added in the text and footnotes of the present part, which

¹ De Vogels van | Guyana | (Surinam, Cayenne, en Demerara) | Door | Frederik Paul Penard | en Arthur Phillip Penard | — | Tweede Deel | (Design) Uitgave van | Wed. F. P. Penard | Paramaribo — 8vo., pp. 587, with numerous half-tone text illustrations. On the reverse of the title page it is stated that the first part was published in April, 1908, and the second in May, 1910. Neither volume is dated on the title page.

² Die Vogel der paläarktischen Fauna. Systematische Übersicht der in Europa, Nord-Asien und der Mittelmeerregion vorkommenden Vögel. Von Dr. Ernst Hartert. Heft VI (Doppelheft). Seite 641–832. Mit 10 Abbildungen. Berlin, Verlag von R. Friedländer und Sohn. Agents in London: Witherby & Co., 326 High Holborn. Ausgegeben im Juni 1910.—8vo, pp. xiii–xlix + 641–834, fig. 125–134. Heft VI, 8s., postage 3d. Vol. I, 28s., postage 1s. 8d.

conforms in general character with its predecessors. The families and genera, as well as the species, comprise in a number of instances several groups that are usually accorded, respectively, independent rank. All the true thrushes, for example, are referred to *Turdus*, and all the true wrens to *Troglodytes*.

In respect to matters of nomenclature, the name *Prunella* properly displaces *Accentor*, and the name of the family becomes *Prunellidæ*. *Chelidon* Forster replaces (and we fear with good reason) *Hirundo* for the *H. rustica* group, and *Hirundo* is again assigned to the House-Swallow or the *urbica* group. Among the new subspecies we note an Irish race of the Dipper (*Cinclus cinclus hibernicus*), based on specimens from County Cork, Ireland. The British Islands now have two insular races of the *Cinclus cinclus* group, the other being *C. c. britannicus* Tschusi.—J. A. A.

Ogilvie-Grant's 'A List of British Birds.'¹—This list is in tabular form and is admirably arranged to show concisely and at a glance the status of each species as a bird of Great Britain: as to whether it is (1) resident and breeds, (2) a regular summer visitor that breeds, (3) a regular autumn, winter or spring visitor that does not breed, (4) an occasional visitor that formerly bred, or (5) an occasional visitor never known to breed. "When species have not occurred more than six times references are given to the works in which they have been recorded." Species of doubtful record and species artificially introduced are entered in the list in brackets and are not numbered. The species known as British birds number 442. The list is printed with one side of the leaf blank, so that it can be cut up for labelling. The nomenclature is binomial, even in the case of local subspecies; in each such instance, however, the name is followed by the statement, in a separate line, "A sub-species of" (whatever the species may be), or by formulæ like this: "*Parus ater*, Linn." followed by, in a separate line, "The Continental form," and "*Parus britannicus*, Sharpe and Dresser," followed by, in a separate line: "British sub-species of *P. ater*." This may be soothing to the feelings of those who dislike trinomials; but the general disregard of all modern codes of nomenclature, incidentally, throughout the list will not be soothing to those who have regard for correct nomenclature. The desirability thus recognized of explaining the relative status of forms here designated by binomials is an admission of the utility in such cases of the trinomial method.—J. A. A.

Felger on the Birds of Northwestern Colorado.²—This is a briefly annotated list of 133 species, collected or observed on a scientific expedition

¹ A List of British Birds showing at a glance the exact status of each species | Revised to August 1910 | By | W. R. Ogilvie-Grant | — | For labelling specimens or for reference | — | Witherby & Co., | 326, High Holborn, London, W. C. | 1910.—Svo, pp. 60. 1s. 6d; postage 2d. extra.

² Birds and Mammals of Northwestern Colorado. By A. H. Felger. University Studies of Colorado Museum, Vol. VII, No. 2, pp. 132–146. January, 1910.

to northwestern Colorado in 1909, under the auspices of the University of Colorado Museum, chiefly in Garfield, Rio Blanco, and Routt counties. As the work of the expedition was mostly done between 5,500 and 8,000 feet altitude, very few alpine forms are recorded. A large number of the species are entered on the authority of Mr. R. S. Ball of Meeker, who has a private collection of birds and mammals. This number of the 'University Studies' (pp. 101-153, with numerous illustrations) is devoted to an account of this expedition, and consists of ten papers on different subjects including itinerary, climatology, botany, mollusks, insects, vertebrates, fossil plants and fossil invertebrates, and a bibliography of the geology and natural history of the region, the reports on the birds and mammals being by Mr. Felger. The expedition was under the direction of Prof. Junius Henderson, and appears to have been fruitful in results.—J. A. A.

Wood on Bird Migration at Point Pelee, Ontario, in the Fall of 1909.¹—This is a detailed daily record of observations made from September 14 to October 16. The advantages of Point Pelee as an observation point for bird migration is due to the fact that here "the migrating hords are concentrated in a small area that can be readily covered by a single observer." The observations are given in the form of a diary, noting the changes from day to day in the relative abundance of the prevailing species. The great fall flight of hawks passed this point mainly during September 18, 19, and 20.—J. A. A.

Jouy on the Paradise Flycatchers of Japan and Korea.²—As explained in an introductory note by Dr. Stejneger, this is a fragment of manuscript left in his hands, with other memoranda and note-books, by the late Pierre Louis Jouy shortly before his death in 1894, with the request that Dr. Stejneger should work up his collection of Korean birds and publish the results. This having proved impossible of accomplishment owing to the pressure of other duties, the present paper, nearly as left by Mr. Jouy, is now published, and serves to indicate how elaborately he had planned the work.

The two species here treated are *Terpsiphone atrocaudata* (Eyton), found in southern Japan and southern Korea, and *Terpsiphone owstoni* sp. nov., inhabiting Hondo Island and parts of China. The descriptions are very detailed, and accompanied by extensive tables of measurements. Dr. Stejneger explains in a footnote the use of *Terpsiphone* in place of *Tchitrea*, under Article 30 of the International Code of Zoological Nomenclature.—J. A. A.

¹ Bird Migration at Point Pelee, Ontario, in the Fall of 1909. By N. A. Wood. Wilson Bulletin, June, 1910, pp. 63-78, with map.

² The Paradise Flycatchers of Japan and Korea. By Pierre Louis Jouy. Proc. U. S. Nat. Mus., No. 1721, Vol. XXXVII, pp. 651-655. Published August 4, 1910.

Slater's Revised List of the Birds of Jamaica.¹—The present List is a "second edition" of the list prepared by the brothers Alfred and Edward Newton for the 'Handbook of Jamaica' for 1881, brought down to date. The principal papers on Jamaican birds are cited in the introductory, special commendation being given of Mr. W. E. D. Scott's 'Observations on the Birds of Jamaica' published in 'The Auk' for 1891, 1892, and 1893, and made in the winter of 1890-91. The present list numbers 194 species, of which 99 are given as constant residents, 52 as winter visitors, and 43 as occasional visitors. Of the 99 constituting the first class, 42 are absolutely confined to Jamaica, and 57 range more or less widely outside of the island. The list is briefly annotated, in reference to the manner and season of occurrence of the species, and there are references under each to the principal places of previous record. The nomenclature is not modern. The list is, however, a useful and convenient summary of Jamaican ornithology.—J. A. A.

MacSwain's 'A Catalogue of the Birds of Prince Edward Island.'—This list,² based on the field notes of the author covering the period 1895-1907, contains 203 species, with supplementary lists containing 17 species previously recorded by other observers, making a total of 220 species thus far known to occur on the island. One, however, is entered twice, once in the main list as *Ammodramus caudacutus subvirgatus* and again in the supplementary list as *Ammodramus nelsoni subvirgatus*! The nomenclature is that of the second edition of the A. O. U. Check-List, and a subsequent change in the name of this form has evidently misled the author. The list is briefly annotated, and is followed by migration tables giving the dates of arrival of some 30 species, as observed by the author, from 1895 to 1905. Of special interest is the following record of the Storm Petrel (*Procellaria pelagica*, p. 572): "One was stuffed by Calder and sent to the museum of the Truro Academy in the autumn of 1905. Two were blown ashore on the north coast of the Island during the great November gales of 1906, and were brought to Mr. Calder." It may be noted that Leach's Petrel (*Oceanodroma leucorhoa*) is not included in the main list but is recorded in the second supplemental list as "Occasionally blown ashore during storms (Bain)." An examination of the specimen at the Truro Academy by a competent expert would be of interest, as there seems to be no other positive record of the occurrence of the Storm Petrel on the American coast.—J. A. A.

¹ Revised List of the Birds of Jamaica. By P. L. Slater, Dr. Sc., F. R. S. 8vo, pp. 24. Reprinted from the 'Handbook of Jamaica' for 1910.

² A Catalogue of the Birds of Prince Edward Island. By John MacSwain, Charlottetown, P. E. I. Proc. and Trans. Nova Scotia Institute of Science, Vol. XI, part 4, pp. 570-592. August, 1908.

Hardy's Reminiscences of Andrew Downs.¹—These reminiscences are based on a long personal acquaintance with this remarkable man while General Hardy was stationed at Halifax on military duty about the middle of the last century. A long article entitled 'An Afternoon with Downs,' contributed to a Halifax newspaper by Mr. Hardy in 1864 is here reproduced, describing in detail Downs's home and Zoölogical Gardens at the head of North West Arm, near Halifax, and the personal traits of a man whose name is inseparable from the history of Nova Scotian natural history. Downs's "Zoo" is said to have been the first "established on the American continent."—J. A. A.

Beal on the Relation of California Birds to the Fruit Industry. Part II.—This is the concluding part of Professor Beal's report on the 'Birds of California in Relation to the Fruit Industry.'² Part I, treating of 38 species, was published in 1907 (see Auk, XXV, Jan., 1908, p. 96). The present part treats of 32 additional species, and consists of statements concerning the food found in the stomach of birds taken mainly in the more thickly settled and highly cultivated parts of the State, since they afford a better test of their relation to husbandry than would the same number of birds taken at random throughout the State.

In reference to the general subject, the author states: "Few birds are always and everywhere so seriously destructive that their extermination can be urged on sound economic principle. Only four of the species common in California can be regarded as of doubtful utility: These are the linnet [House Finch], California jay, Steller jay and redbreasted sapsucker. When the known methods of protecting fruit have been exhausted, or cannot be employed profitably, then a reasonable reduction of the numbers of the offending birds is permissible. But the more the food habits of birds are studied the more evident is the fact that with a normal distribution of species and a fair supply of natural food, the damage to agricultural products by birds is small, compared with the benefit."

Of the California Jay it is said that it does "entirely too much nest robbing for the best interests of the State," as well as being a despoiler of fruit. While woodpeckers in general rank high as useful birds, the Red-breasted Sapsucker is classified as more harmful than beneficial, owing to its habit of pecking holes in the bark of trees and stripping it off in patches.

The report is illustrated by eight beautiful colored plates, after drawings

¹ Reminiscences of a Nova Scotia Naturalist: Andrew Downs. By Major-General Campbell Hardy, R. A., Dover, England. Proc. and Trans. Nova Scotia Institute of Science, Vol. XII, part 1, pp. xi-xxx. August, 1908.

² Birds of California in Relation to the Fruit Industry. Part II, By F. E. L. Beal, Assistant, Biological Survey. Biological Survey, Bulletin No. 34. 8vo, pp. 96, with 6 colored plates. Washington, Government Printing Office. Issued August 8, 1910.

by Louis Agassiz Fuertes, representing the following species: California Quail, Arkansas Kingbird, California Jay, Brewer's Blackbird, Bullock's Oriole, and Green-backed Goldfinch.— J. A. A.

McAtee's 'Plants Useful to Attract Birds and Protect Fruit.'¹—

Attention is here called "to the plants which best serve to provide food for birds and to draw their attention away from cultivated crops." A list of the species of native plants most resorted to for food by birds is given. From this list species can be selected for cultivation which will afford both shelter and a continuous supply of food, including some which retain their fruit through the winter and furnish a food supply at seasons when bird food is hardest to obtain. Food plants are suggested for various groups of birds, and for different regions. The mulberry is recommended as unsurpassed for alluring birds from early orchard fruits. There are also suggestions for providing water and favorable haunts, as well as food, and for the protection of birds from cats and other predatory animals.— J. A. A.

Game Laws for 1910.²— This is the eleventh annual summary of the game laws of the United States and Canada, and reviews the laws which passed, and which failed to pass, during 1910, together with a schedule of open seasons, and the regulations respecting the shipment and sale of game, and the obtaining of licenses for hunting and shipping, under the Federal and State laws of the United States, and the orders in council of the Canadian Provinces. These annual digests are of great importance and convenience as a source of definite information for sportsmen and game protectors, and form a valuable record of progress in bird and game protection.— J. A. A.

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¹ Plants useful to Attract Birds and Protect Fruit. By W. L. McAtee, Assistant, Biological Survey. Yearbook of Department of Agriculture for 1909, pp. 185-196.

² Game Laws for 1910. A Summary of the Provisions relating to Seasons, Shipments, Sale, Limits, and Licenses. By Henry Oldys, C. E. Brewster, and Frank L. Earnshaw, Assistants, Biological Survey. 8vo, pp. 47. Farmers' Bulletin 418. Published September 2, 1910, U. S. Department of Agriculture, Washington.

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CORRESPONDENCE.

The Possessive Form for Personal Bird Names.

EDITORS OF 'THE AUK':

Dear Sirs:—Black, White, Brown, Green, Gray; Hill, Pond, Moor,
Marsh, Wood, Lake, Beach; Fish, Bush, Crane, Stone; Little, Strong,
Swift, King, Small;—these, and others of the same sort, are common
surnames, and as likely to belong to naturalists as to anybody else.

Surely this is a sufficient rebuttal of the arguments in favor of dropping
the possessive *s* and apostrophe from the common names of birds and
beasts named after men.

Sincerely yours,

GERALD H. THAYER.

Monadnock, N. H.
June 15, 1910.

NOTES AND NEWS.

HENRY HILLYER GIGLIOLI, an Honorary Fellow of the American Ornithologist's Union, died in Florence, Italy, December 16, 1909, in the 64th year of his age, having been born in London, June 13, 1845.¹ His father was Dr. Guiseppe Giglioli, who while a political exile from Italy sojourned for a while in Edinburgh, and later in London where he married an English lady, Miss Hillyer. The younger Giglioli was thus partly of English descent. In 1848 the family returned to Italy, but in 1861 the son, then sixteen years of age, "was sent by the Italian Government to study in London, and selected the School of Mines for that purpose." During the three years spent in London he made the acquaintance of many of the leading English naturalists. He returned to Italy and in 1864 took his degree at the University of Pisa. The following year he received the appointment of assistant naturalist, under Professor De Filippi, to the Italian Government scientific expedition around the world in the war-ship 'Magenta', and upon the death of De Filippi from cholera early in the voyage he succeeded to the "command of the expedition at the early age of 22, but, with his usual energy and resourcefulness, succeeded in carrying out his work satisfactorily, and returned in three years' time, after having circumnavigated the globe." His account of the expedition, published in 1876, forms a volume of over one thousand pages, illustrated by numerous plates and maps. In 1869 he published, with Salvadori, a paper in 'The Ibis' (1869, pp. 61-68) entitled 'On some new Procellariidæ collected during a Voyage around the World in 1865-68,' in which the authors described six new species of Petrels. In a second paper published in 'The Ibis' the following year (1870, pp. 185-187) a new genus and two new species of birds are described by the same authors. His ornithological report of this voyage appeared as a separate work in 1870 (8vo, Florence, pp. 96).

In 1869 he was made Instructor in Zoölogy and Comparative Anatomy of Vertebrates at the Royal Institute in Florence, a position he held uninterruptedly for forty years, or until his decease, becoming, in 1874, Professor of this department and Director of the Zoölogical Museum. In 1876 he "laid the foundation of the fine collection of Italian vertebrate animals, now the pride of the Florence Zoölogical Museum." His subsequent years were devoted to research, chiefly in the Museum, but varied by numerous expeditions in southern Europe, including deep-sea explorations in the Mediterranean which established the existence of an abysmal fauna in this inland sea.

¹ This notice is based primarily on the 'Biographical Notice of the late Professor Giglioli,' by his intimate friend Joseph I. S. Whitaker, published in 'The Ibis,' July, 1910, pp. 537-548.

While Giglioli was first of all an ornithologist, he was an excellent zoölogist in other lines, and was especially interested in deep-sea and pelagic life. His principal ornithological publications relate to the birds of Italy, of which the first, a catalogue of Italian birds, was published in 1881 (*Ann. di Agric.*, Roma, 1881, No. 26; also separate, pp. 133) and the second, '*Avifauna Italica*' (8vo, pp. vii + 625) in 1886. In 1885 he was appointed by the Italian Government to institute an investigation of the birds of Italy, the results of which form three large octavo volumes, of about 700 pages each, entitled '*Resoconto dei risultati della inchiesta ornitologica in Italia*,' of which Part I, '*Avifauna Italica*,' appeared in 1889; Part II, '*Avifauna Locali*,' in 1890; Part III, '*Notizie d'indole generale*,' in 1891. In 1907 he published a second edition of the '*Avifauna Italica*,' in a single volume of about 800 pages.

His collection of the vertebrate fauna of Italy in the Florence Zoölogical Museum is a monument to his zeal and devotion to its formation, it being, it is said, the most complete of its kind in Italy, and probably more complete than any similar collection elsewhere. Shortly before his death it was decided that it should bear his name and be known in future as the Giglioli Collection. Information of this decision was made known to him during his final illness, but the official announcement was made at the commemoration of Professor Giglioli held at the Florence Museum February 2, 1910. The 20th of December had been fixed as the date for the celebration of the fortieth anniversary of his call to the chair of Zoölogy and Comparative Anatomy of Vertebrates at the Royal Institute of Florence, at which the King of Italy was to be present and bestow upon Giglioli the high distinction of '*Grande Ufficiale della Corona d'Italia*.'

Giglioli was an anthropologist and archæologist of note, a geographer of merit, a competent ichthyologist, and held important Government appointments relating to economic zoölogy. As said by his biographer in '*The Ibis*': "Giglioli was a man of wonderful versatility and general qualifications, and, at the same time, most thorough and painstaking in all he undertook to do. His capacity for work was prodigious, as shown by the long list of his published writings, the collections he formed, the many zoölogical explorations carried out by him, and the numberless scientific meetings he attended, and all this over and above his ordinary professorial and other work. In no way exhausted by his day's labors at the Museum, it was his habit to work far into the night at home. . . . Few men perhaps have ever had such a gift of making and of retaining friends as Giglioli had. His geniality formed an irresistible attraction, while the wonderful freshness of youth, which he retained to the last, coupled with his bright intelligence and cheery voice and manner, captivated and held one a willing prisoner. For those who knew him intimately, moreover, he had the additional great charm of loyalty and sincerity, and was a true friend on whom they knew they could rely."— J. A. A.

WILLIAM EARL DODGE SCOTT, a well known ornithologist, died suddenly at Saranac Lake, New York, August 23, 1910. He was born in Brooklyn, New York, April 22, 1852. He was a son of Moses Warren and Juliet Ann (Cornell) Scott, and a great-grandson of Moses Scott, a surgeon in the Revolutionary army and a member of General Washington's staff. His father died when young Scott was five years old, at about which time he was seized with a lameness that defied the best medical skill and proved a serious disability throughout his life, rendering a cane, and often crutches, necessary as an aid in walking. His early education was conducted by a private governess, but later he attended a German academy in Brooklyn, and spent a year at a boarding school in Providence, Rhode Island. He was a member of the first freshman class at the opening of Cornell University in 1868, and the following year entered the Lawrence Scientific School at Harvard University as a special student in zoölogy under the great teacher Louis Agassiz, and in due course received from this institution the degree of B. S. in 1873. During his residence in Cambridge he became one of the original members of the Nuttall Ornithological Club, and in 1884, while residing in Arizona, was elected a Corresponding Member of the American Ornithologists' Union. Two years later, on his return to New York, he was elected to active membership, which he retained till 1894.

Mr. Scott is remembered by the older members of the A. O. U. as an enthusiastic and, notwithstanding his life-long physical infirmity, energetic and indefatigable field ornithologist, conscientious and accurate in his observations and an expert collector. His first notable ornithological trip was to Coalburg, in the Kanawha Valley, West Virginia, when he was twenty years old, the results of this trip being published in 1872, in a paper in the 'Proceedings' of the Boston Society of Natural History (Vol. XV, pp. 219-227) entitled 'Partial List of the Summer Birds of Kanawha County, West Virginia.' In 1874 he spent several months collecting birds in the vicinity of Warrensburg, Missouri, for a normal school at that place, the results of his work at this point being given in 'Notes on Birds observed during the spring Migration in Western Missouri (Bull. Nutt. Orn. Club, IV, July, 1879, pp. 139-147).

In 1875 he was employed by the trustees of Princeton College, in forming, at Plainfield, New Jersey, a collection of birds, and the next year he was appointed Acting Curator of the Princeton College Museum of Biology, which position he held till 1885, when he was made Curator of the Department of Ornithology, a position he held until his death, though compelled by ill health to be a non-resident of Princeton during the later years of his life.

His connection with the Princeton Museum was the beginning of a long period of field work, at first in the interest of the University, but later independently. During the winter of 1875-76 he collected in Sumpter County, Florida; in the fall of 1876 and spring of 1877 along the coast of New Jersey. In 1878 he worked for a number of weeks in the Twin

Lakes region of Colorado, and spent the winter of 1879-1880, on the Gulf Coast of Florida, collecting mainly near the mouth of the Withlacoochie River. In the spring of 1881 he devoted a number of weeks to the study of bird life at Cobb's Island, off the coast of Virginia, and a portion of the summer of the same year at Nantucket Island, Massachusetts, in pursuit of sea-birds.

Up to this time his rich and varied collections of birds were made for the Princeton Museum, which soon numbered thousands of beautifully prepared skins, besides hundreds of specimens finely mounted for exhibition. But in the spring of 1881, he obtained leave of absence to visit southern Arizona, partly on business and partly for ornithological research. Here, chiefly in Pinal, Pima, and Gila counties, he spent the greater part of the next four years, forming a collection of 2500 birds, which later were purchased by the American Museum of Natural History. Leaving Arizona in March, 1886, he proceeded to Tarpon Springs, Florida, where he remained almost continuously till August, 1888, collecting at different points along the Gulf Coast from Cedar Keys to Key West. Later visits were made to Florida in 1890, when several weeks in March and April were spent at the Dry Tortugas, and in 1891-1892, when the period from November 21 to April 26 was devoted to an exploration of the Caloosahatchie region. The winter of 1890-91 was given to ornithological work in the island of Jamaica. Thus from 1875 to 1892 Mr. Scott was almost continuously engaged in field exploration, visits being made to the mountains of Virginia and North Carolina during intervals of rest from work in Florida, and as a respite therefrom.

The rich experience thus gained and the thousands of specimens thus acquired became the basis of numerous important contributions by Mr. Scott to ornithological literature, published principally in 'The Auk' and its predecessor, the 'Bulletin' of the Nuttall Ornithological Club, during the years 1879 to 1892. His explorations have added many species and subspecies to the known avifauna of the United States and quite a number new to science, some of them described by him and some by others on the basis of material collected by him. But perhaps far more important than this have been his contributions to the life histories of many previously little known species, and to a better knowledge of the distribution, migrations, and changes of plumage due to season and age of a large number of others.

Among Mr. Scott's contributions to ornithological literature, in addition to those already instanced, are his 'Bird Studies: An Account of the Land Birds of Eastern North America' (1898), 'The Story of a Bird Lover' (1903), and 'Birds of Patagonia' (4to, pt. 1, 1904, Pt. 2, 1910, with a large portion of the work still unpublished). The 'Story of a Bird Lover,' charmingly written, is autobiographical, and replete with evidence of the intense enthusiasm and wide range of interest with which the author pursued his favorite studies. It contains also a list of his ornithological publications down to the year 1902.

For many years Mr. Scott was deeply interested in the study of the living bird, and for this purpose he maintained for some years a large aviary at his Princeton home. In the last chapter of his 'The Story of a Bird Lover,' entitled 'The Naturalist's Vision,' he relates the growth of his interest in birds as *individuals* and the development of his "laboratory for the study of live birds," in which, at the time of writing, he had installed and under constant observation between four hundred and five hundred birds. At about this time (1901-1904) he published in 'Science' a number of papers on the results of his observations, mostly in reference to the inheritance of song in birds. In 1904 was founded the 'Worthington Society for the Investigation of Bird Life,' at Shawnee, Munroe County, Pennsylvania, by Mr. Charles C. Worthington, along the lines indicated in Mr. Scott's 'The Naturalist's Vision,' with Mr. Scott as Director of the proposed work. (See Auk, XXI, Oct. 1904, pp. 511, 512.) Mr. Scott soon after broke down in health and little has been heard since of this well-conceived project.

His 'Birds of Patagonia' is based on the collections made by the late Dr. J. B. Hatcher and his assistants on the Princeton University Expeditions to Patagonia, 1896-1899. In order to prepare this work, to which he had been assigned, Mr. Scott took the collection to England for the purpose of thorough identification at the British Museum, in which he was assisted by the late Dr. R. B. Sharpe, whose name also appears on the title-page of the work. Although only the first 350 pages (probably less than one half) have been published the manuscript of the whole work had been finished and the completion of the work thus assured. This is Mr. Scott's sole piece of systematic work, but, thanks doubtless to a guiding hand, it forms a most convenient and useful compendium of Patagonian ornithology.

In recent years Mr. Scott suffered seriously from ill health, being thus compelled to give up active work and seek relief in the dry and bracing climate of the Adirondacks. Although apparently benefited for a time by the change, the improvement proved only temporary. His last ornithological paper was published in the July issue of this journal, and is apparently the only ornithological paper issued by him in recent years.

In 1877 Mr. Scott married Miss Marian Johonot, daughter of James Johonot, a well known educator of Ithaca, New York. She manifested always deep interest in his work, and shared with him the vicissitudes and exposures of his various natural history journeys.

ORNITHOLOGISTS will be interested to know that arrangements have been made by the Smithsonian Institution with Mr. A. C. Bent, of Taunton, Mass., for the continuance of the work on the 'Life Histories of North American Birds' which was so ably begun by Major Bendire and for which there seems to be a general demand.

We understand that the work will be conducted on practically the same plan as that followed so successfully by Major Bendire, and its completion

will depend largely on the coöperation of ornithologists in various parts of the country, who are invited to contribute original notes or observations relating to the life histories or habits of birds. The more important of such contributions will be published in the contributor's own words and on his authority. It may not be possible to publish everything contributed, but the material selected for publication will be so chosen as to make the life history of the species as complete as possible and to illustrate variations in habits throughout its range.

Subspecies will be given secondary rank; that is, each species will be treated as a whole so far as its habits are not affected by variation in its environment; but, under proper sub-headings, any traits or habits peculiar to the different subspecies will be clearly set forth, as well as any variations in habits due to changes in environment. This method seems preferable to treating each subspecies separately, which gives the subspecies too much prominence and requires much needless repetition regarding common traits.

The nomenclature and the sequence of the new Check-List of the American Ornithologists Union will be followed as closely as possible, beginning with the Grebes. Other methods of classification have been suggested but it seems best to follow the standard officially adopted by American ornithologists, with which all of us are more or less familiar.

The first volume will probably contain the Pygopodes, Longipennes, Tubinares, Steganopodes and Anseres. Unfortunately these orders include a great many species about which very little is known, notably many of the Arctic species; although the Arctic journals of some of the earlier explorers contain much valuable unpublished material, it is more or less fragmentary and far from satisfactory for the purposes of this work. Expeditions to all the remote regions of North America to gather material, photographs and notes especially for this work, would consume a vast amount of time and money, more than any one man could devote to it in a lifetime. The necessity for coöperation is apparent if the work is to be completed within a reasonable time.

The author will be glad to correspond with any ornithologist, or any careful observer of birds, who would like to become a contributor, and would be glad to suggest methods of study which will give us the information most needed to fill the gaps in our present knowledge. Ample time will be given to each observer to study carefully the life histories of a limited number of species which are most readily accessible.

In addition to the excellent colored plates of the eggs, which were such a prominent feature of Major Bendire's work, it is proposed, provided sufficient funds are available at the time of publication, to still further enrich the work by adding a series of reproductions of the best photographs obtainable, illustrating breeding colonies, nesting sites, nests, eggs and young at various stages of development, of as many species as possible. The author already has a large series of such photographs but

would be glad to receive offers from others to furnish material in this line when the time comes to use it.

It will require a number of years to collect and work up all the material necessary for even the first volume. It is none too early to begin to plan now for the next season's field work. Therefore, the author would be glad to hear from all who are willing to contribute, so that the work can be carefully planned.

THE conservation of bird-life was given due attention at the National Conservation Congress held in St. Paul, September 5-8. An address on this subject was delivered by Mr. Frank M. Chapman; and a plan endorsing the proposed Federal law for migratory birds, was embodied in the platform of the Conservation Association.

AT THE Fifth International Ornithological Congress, held in Berlin, May 30 to June 5, 1910, Section IV, Bird Protection, formulated certain "rules and regulations," which were unanimously adopted by the entire Congress, for an international agreement for the suppression of traffic in the plumage of wild birds for millinery purposes. Mr. William Dutcher, the only American delegate to the Congress, took an active part in the work of this section, and he, with Dr. T. S. Palmer, of the United States Department of Agriculture, were appointed as the American representatives on the International Committee for the Protection of Birds. Mr. Dutcher presented two papers at the Congress, entitled, 'The History of the Audubon or Bird Protection Movement in North America,' and 'Some Reasons why International Protection is Necessary.'

During Mr. Dutcher's absence in Europe, a number of his friends improved the opportunity to give expression to their esteem of his work in this country for bird protection.

"Under the leadership of Mr. W. W. Grant, a committee was . . . formed and contributions solicited to a fund which, in commemoration of the sympathy and support Mr. Dutcher's daughter, during her all too brief life, had always given her father in his ceaseless labors, was named the Mary Dutcher Memorial Fund.

"Both the numbers and the character of the responses which were received to the committee's circular letter, showed that the plan it proposed met with the most widespread and hearty approval. Although only a short time was available, and this at an unfavorable season, the fund amounted to nearly \$7,000 before July 1, and additions to it are still being made daily.

"This substantial testimonial was presented to Mr. Dutcher, as President of the National Association of Audubon Societies, at a luncheon given to him on July 14, shortly after his return from Europe, and if each contributor to the fund could have seen the profound sense of appreciation with which it was accepted, his pleasure in taking part in this well-deserved tribute would have been more than doubled.

"It is proposed that the interest on the Mary Dutcher Fund be used [for bird protection] in such a manner that a report on the results attending its expenditure [can] be rendered yearly." (F. M. C., in *Bird-Lore*, Vol. XII, No. 4, July-August, 1910, p. 172.)

MESSRS. OWEN BRYANT and WILLIAM PALMER, who have been collecting natural history material in Java for the past year and a half, have recently returned home. Both of the travellers suffered from exposure, and from the effects of prolonged work in the tropical lowlands. Their operations were confined to the western end of the island, where they were very successful, collecting both at sea level and up to the summits of Mount Gedé and other peaks. They obtained nearly all of the indigenous birds of western Java, and made large collections in other branches of natural history. The expedition was conducted under the auspices of the U. S. National Museum, and the expenses were defrayed by Mr. Bryant.

PART V of Mr. Ridgway's work on the 'Birds of North and Middle America' is nearing completion, and it is expected the manuscript will be ready for the printer by the first of November. The author is now engaged upon the Woodpeckers, the last family to be included in this part, and is working diligently to bring the volume to a close.

The appearance of his 'Nomenclature of Colors' has been delayed by unexpected mechanical difficulties in printing the plates. These have now been overcome and their preparation is going on rapidly.

A NEW book on 'Methods of Attracting Birds,' by Gilbert H. Trafton (Houghton Mifflin Co.), has reached us just in time for brief mention in the present connection. It is a volume of nearly two hundred pages, with about forty text illustrations, and has been prepared in coöperation with the officers of the National Association of Audubon Societies and is published with their approval. The book treats of nesting-house, how to attract winter birds, the preparation of bathing and drinking-fountains, planting trees and shrubs to furnish food and shelter, bird protection and other allied topics.

THE TWENTY-EGTH STATED MEETING of the American Ornithologists' Union will be held in Washington, D. C., beginning November 14, 1910. The business meeting will be on the evening of that date, for the election of officers and members and the transaction of routine business. Tuesday and the following days of the session will be devoted to the presentation and discussion of scientific papers, and will be open to the public. Members intending to present communications should forward the titles to the Secretary, Mr. John H. Sage, Portland, Conn., in time to reach him not later than November 10.

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ERRATA.

- Page 23, line 10, for **practincola** read **pratincola**.
 " 51, footnote 6, for Morristown read Moorestown.
 " 52, line 7, for Parker read Parkman.
 " 133, " 1, for **Nuttalornis** read **Nuttallornis**.
 " 148, " 9, for **Hesperiphona vespertinus montanus** read **Hesperiphona vespertina montana**.
 " 282, " 1, for **californicus** read **californianus**.
 " 300, " 21, for **Sialis sialis** read **Sialia sialis**.
 " 316, " 15, for **semipalmata** read **semipalmatus**.
 " 358, " 12, for **Thrassaëtus** read **Thalassaëtus**.

Plate XIII, upper figure: the nest is a nest of the Magnolia Warbler, accidentally mislabelled Black-throated Green Warbler.

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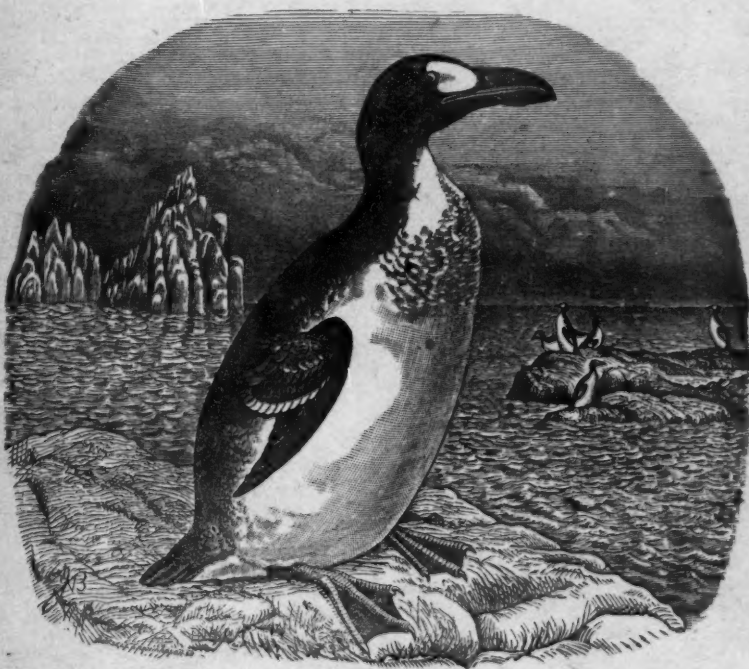
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